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CHOREA IN THE ADULT AS SEEN AMONG THE INSANE.

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In collecting data for the preparation of a paper upon hereditary chorea which appeared in the Journal for December last, I found that chorea in adult persons was, irrespective of the feature of heredity, considered by a large number of writers as a rare affection. I, myself, had never seen a case except in this hospital, where there are at present six cases, three of which present very unusual features, viz.: one is a case of so-called hereditary chorea, another has chorea alternating with epilepsy, while a third is of peculiar interest because it is a congenital case.

In the article above referred to, I have spoken of the first two of these cases, the case in which direct hereditary transmission was traceable, forming the text for the discussion. In this paper I shall again refer to both cases, though briefly, together with the four unpublished cases. A search into the literature of the subject led me to believe that six adult choreics in an insane population of 900 was a large number; but, on the other hand, I felt that the rarity of the affection is not so great, at least among the insane, as is claimed by some authors.

Several writers have spoken of various moral, mental, and emotional deflections which were observed in choreics with long-standing histories of the affection. Clouston[1] as early as 1870 spoke of choreic insanity, and again in 1873[2] he called attention to "choreic insanity," which he says "is in every way allied pathologically as well as in its symptoms to the "rheumatic insanity"—an affection to which Skae[3] referred in

[1] Journal of Mental Science, vol. xvi. p. 210.
[2] Ibid., vol. xx. p. 207.
[3] Ibid., vol. xx. p. 204.

his lectures in 1845. Graves early called attention to chorea in the aged. Clouston recognized the fact that insanity and chorea coexisted in a single individual, but appears to have regarded rheumatism as the sole cause of the trouble—*i. e.*, given a case of chorea with mental disturbance, there must have been an antecedent history of rheumatism. He quotes the opinion of Arndt, a careful German observer, who

"does not believe in the existence of chorea without more or less simultaneous affection of the intellectual faculties. The abnormal movements are mere symptoms of a much more extensive disorder involving the entire nervous system."

After discussing the mental disorder observed in ordinary chorea of childhood, Clouston says:

"There is a form of insanity, or rather mental imbecility, that accompanies and results from a long-continued chorea. . . . It is, in fact, the ordinary dementia that follows all long-continued mental derangement."

Thus we see that Clouston at that time recognized the facts that chorea was to be found in a chronic form, and that its existence so continuously in a person brought about a gradual impairment of the mental faculties which progressively increased and finally came to be actual dementia.

Bucknill and Tuke[1] pass the subject over after quoting Griesinger and Clouston. Griesinger[2] says very rarely chorea arises out of acute rheumatism, but that "sometimes, under the influence of accessory causes, we see prolonged melancholia with stupor, mania, mental weakness, etc., occur."

Spitzka,[3] after combating the idea that the mental faculties are ordinarily affected in chorea of childhood, discusses the subject of chorea in the chronic insane in these words:

"In protracted cases of chorea the mind suffers in the direction of actual insanity; in that case maniacal outbreaks, confused delirium, enfeeblement of the memory, rapid emotional change, and, in extreme cases, dementia may ensue. It is a psychosis with these symptoms which is designated choreic insanity."

Savage[4] relates a case of "multiple sclerosis," of which he says:

"I have no doubt that a few years ago this case would have been looked upon as one of chorea with mental symptoms; and it was in many particulars like the disease, but there was sufficient evidence to make the diagnosis sure."

Considering the element of doubt here introduced as to the diagnosis of this case, it is to be regretted that the distinguished author does not give us something which would make this point clear. To say that the patient had "all the peculiarity of head and limb movement which is common

[1] Psychological Medicine, pp. 377 and 378.
[2] Op. cit., Sydenham Society Translation, p. 189.
[3] Manual of Insanity, p. 372.
[4] Insanity and Allied Neuroses, p. 390. (Ed. 1885.)

in that disease" (multiple sclerosis) does not convey to the reader a very clear idea. Further, when he says "any attempt at movement was followed by irregular, spasmodic movements of all his limbs," I cannot feel, as does Dr. Savage, that the diagnosis is certain. On the contrary, from the description, it looks quite as much like a case of chorea as it does of multiple sclerosis. Savage states there were six choreics among 846 patients admitted to Bethlem. Intellectual weakness, he says, is common in these patients, but tells us no more of them than the mention of that fact.

M. Rosenthal[1] calls especial attention to the hereditary irritability of the coördinating apparatus. This disposition, he says, is not always shown by the direct transmission of choreic affections, but the existence of other nervous diseases in the parents or other members of the family. Wharton Sinkler[2] says chorea may occur at any age, and has himself recorded[3] two cases in persons aged eighty-two and eighty-six respectively.

Speaking of psychical disturbances in chorea, von Ziemssen[4] says they are "rarely absent, although in the lighter cases they are but little developed." Charcot[5] satisfactorily demonstrates that chorea and ordinary senile trembling are essentially different conditions. The gesticulatory character of the one, he declares, cannot well be mistaken for the simple oscillatory movements of the other, which are usually confined to the head.

The coarse, irregular, incoördinate movements of the choreic are peculiar and distinctive. I myself have never seen a case of chorea which could be mistaken for paralysis agitans, locomotor ataxia, multiple or lateral sclerosis—the affections presenting symptoms which are nearest in character to those of chorea. Further, I am unable to notice any essential difference between the movements in these chronic cases of chorea with insanity and those observed in the ordinary chorea of childhood, except, perhaps, the movements in the latter case are, as a rule, more exaggerated.

We find occasional references to chorea in the adult by the early writers, a few of whom appear to have recognized and noted, though briefly, this interesting phase of the disease; but, for several years just prior to the appearance of Charcot's paper upon the subject in 1878, the disease appears to have been, by many, lost sight of or confounded with ordinary senile trembling, or one of the various scleroses. Its very existence was unknown or denied. Since the date of Charcot's monograph the affection has been noted and described by a sufficient

[1] Diseases of the Nervous System.
[2] Pepper: System of Medicine, vol. v. p. 441.
[3] Journal of Mental and Nervous Disease, July, 1881.
[4] Cyclopædia of Practice of Medicine, vol. 14, p. 438.
[5] Medical Times and Gazette, 1878, vol. i. p. 245.

number of observers to make unnecessary, in this place, an attempt to establish the fact of its existence or an endeavor to go into the points of differential diagnosis. I do not mean to say that no cases are to be found which cannot be diagnosed readily—for such there may be; but I simply wish to say this, that ordinarily—in the great majority of cases—no difficulty in diagnosis is experienced.

I will next notice some reports of cases of chorea in the adult. Several of them are of great interest, and all, I think, are worthy of perusal in connection with the subject.

James Macfaren's[1] is the earliest report of a single case which I can find:

> It is the case of an unmarried man, aged forty-six years, who was sober and industrious in his habits. Choreic movements noticed six years ago; slowly but steadily increasing. At time of admission to hospital "had constant choreic twitchings of his limbs, which were never still for an instant; was always swinging his head about and jerking it from side to side. When asked to put out his tongue could not do so for some time, and then suddenly protruded and withdrew it." The mental symptoms were slight. There was some enfeeblement of mind, and upon slight provocation he was often extremely irritable. No history of rheumatism. Heart examined frequently and found to be normal.

Sutherland[2] reports a case of "hysterical chorea" in a married woman, aged fifty-three years. Twenty-five years ago she had an attack of chorea caused by anxiety for safety of her husband, who was a soldier engaged in the Crimean war. Six months before she had had an attack of tetanus, immediately after which choreic movements were noted. The incomplete history of an attack of tetanus, and the fact that the patient had a "sham epileptic fit," led the author to believe this case to be admixed with hysteria.

G. Mackenzie Bacon[3] relates the case of a female, aged fifty-eight years, admitted to Cambridge Asylum with maniacal excitement and severe choreic movements which had existed six months. She died in the hospital after rather a long residence there, having been choreic continuously up to the time of her death.

Octavius Sturges, in a painstaking article on "Statistics of Fatal Chorea,"[4] in which he brings together 80 cases[5] of death in connection with the disease, draws attention to the striking fact that, although chorea is generally regarded as a child's affection *par excellence*, 48 of these cases were of persons over thirteen years of age, and the ages of two not being stated. As to sex, of 46 of these 80 cases (excluding from consideration the other 34 because particulars were not given) he finds 34 were females and 12 males, only 8 of the females being children; of the males, 9 were adults and 3 boys. The principal reason why these

[1] Journal of Mental Science, vol. xx. p. 97.
[2] Ibid., vol. xxv. p. 398.
[3] Ibid., vol. xxvi. p. 253.
[4] Lancet, July 17, 1880.
[5] These cases were gathered from records of a great number of years, and are taken from the following sources: (*a*) 3 cases (quoted by Dr. Bright), Med.-Chir. Trans., 1839; (*b*) 11 cases (Dr. Hughes), Guy's Hospital Reports, 1846 (first series); (*c*) 7 cases (from same source), 1855 (second series); (*d*) 34 cases (Dr. Tuckwell), St. Bartholomew's Hospital Reports, vol. v.; (*e*) 22 cases (Dr. Dickinson), Med.-Chir. Trans., vol. lix.; (*f*) 3 cases (Dr. Peacock), St. Thomas's Hospital Reports, vol. viii.

statistics show such a great disproportion of deaths among adults as compared with children is because of the chronic character of the disease in the adult, and the almost invariably acute character in children. The adults usually died *of* chorea, while children died *with* the disease. Of the few deaths in children dying *of* chorea nearly all occurred about the age of puberty. Tnis time of life is regarded by Sturges as a strong predisposing cause of death, the fatal cases, among the children, belonging almost exclusively to this period.

W. Bevan Lewis[1] reports in detail a case of post-hemiplegic chorea associated with insanity in a woman aged sixty-one years:

Eighteen months before, she was seized with paralysis affecting the right side of her face and right arm; she was also deprived of the faculty of speech, but the right leg was unaffected, and she did not lose consciousness. Six months ago she began to lose control over the movements of the right leg, and about the same time the right arm, which had regained much of its former power, became the seat of characteristic movements which were present upon her admission to the West Riding Asylum. Coincidently with the onset of choreic movements mental derangement was noticed. Her speech was notably choreic; she was peevish, querulous, and obstinate, unable to concentrate her attention, and, at times, unable to make the slightest mental exertion.

The *post-mortem* examination revealed a superficial softened patch, involving the cortex of the posterior part of the left supra-marginal, anterior limb of the angular and second annectant gyrus of the left hemisphere; similar softening involved both ascending parietals along their middle thirds; cortex generally wasted and thin. Careful examination of the ganglia of both hemispheres showed no change beyond a minute hemorrhage of recent date, involving the posterior part of the left lenticular nucleus.

Charcot reports two cases of chorea (already referred to) both of the same age—seventy-one; in one case the disease had existed twelve and in the other eleven years. He believes the affection due to emotional causes and not associated with rheumatism or heart disease, and that it is incurable but does not endanger life.

Robert Saundby[2] presents notes of three cases of his own, and adds brief summaries of eight cases already reported by others, making his paper a consideration of twelve cases in all.

Case 1.—Man, aged sixty-six; never had rheumatism; does not attribute his illness to any emotional cause, but has been worried about business. Can walk half a mile. Movements which affected left side and chiefly the left upper extremity have much abated under observation. Has gouty pains in his legs; has double aortic and a mitral systolic murmur.

Case 2 (previously noted by Russell[3]).—Man, aged sixty-eight, who had been ill eighteen months. No heart disease or history of rheumatism. No signs of dementia.

Case 3.—Man, aged eighty-seven; no obvious dementia, but disease has existed only five weeks. Movements, which are constant, chiefly affect the arms, but the head and legs are not free from them; no heart disease or history of acute rheumatism; has enlargement of extremities of metacarpal

[1] Journal of Mental Science, vol. xxx. p. 256.

[2] Chorea in the Aged. Lancet, 1884, vol. ii. p. 948.

[3] Medical Times and Gazette, 1878, vol. ii. p. 627.

bones; has suffered from rheumatism in all his joints, but was never laid up with it. Upon inquiry does not admit that he has any trouble and seems of a cheerful disposition.

CASE 4 is one recorded by Russell.[1]—A lady, aged seventy-seven, who recovered after an illness of seven months. Movements mainly left-sided; no dementia; normal heart; never had rheumatism, or previously chorea.

CASE 5, by C. J. Devis.[2]—A man, aged seventy-nine; demented; chorea confined to left upper extremity and left side of face; no cardiac disease or history of rheumatism. He died under observation after chorea had lasted a month.

CASES 6 and 7 by Wharton Sinkler, and Case 8 by M. Bacon, have already been referred to in this paper.

CASES 9 and 10, by Graves.[3]—One in an apothecary, aged seventy, which was "severe and lasted many months." The other in a woman, aged fifty, who had family troubles; the attacks were intermittent, but when present did not leave her even during sleep.

Saundby thinks—and I concur in his opinion—that difficulties in the diagnosis of chorea arise principally from ignorance of the fact of the existence of the affection in adult and old persons. The ordinary senile trembling is not easily confounded with chorea when it is known that both affections are, without doubt, found at the same time of life.

J. C. McLearn[4] notes the case of a gardener, aged fifty-six; good family history; no heart trouble; has never had rheumatism. Fifteen years ago he became "nervous;" staggered in walking. These first choreic symptoms continued to increase slowly until four years ago, when the death of his wife profoundly affected him. His choreic symptoms became greatly exaggerated. These movements affect arms and head more than trunk; there is cessation during sleep. He has difficulty in articulation; tongue protruded in jerky, irregular manner; irritable, easily excited by trifles, but he is not demented; cannot stand alone; gait shuffling and unsteady. He has had arsenic, iron, bromide of potassium, conium, sulphate of zinc, and, locally, ether to the spine. No improvement noted.

Sée has noted chorea in a woman, aged thirty-six, in another forty-four, and in a man fifty-one. Jeffreys in a patient sixty years old. Powell and Maton in another seventy years old. Bouteille saw a man aged seventy-two who was affected with it. Henri Roger, a case of chorea in a lady eighty-three years of age.

C. B. Radcliffe[5] quotes 96 cases of chorea, the statistics of which were given by Ogle. Of these cases 19 were above fifteen years of age; 2 occurred at sixteen, 6 at seventeen, 2 at eighteen, 1 at nineteen, 2 at twenty, 2 at twenty-one, 1 at twenty-three, 1 at twenty-four, 1 at twenty-six, 1 at forty-three; and of these 19 cases only 3 were males.

Without pretending to notice all recorded cases of chorea in adults, I have endeavored to present in these more or less concise abstracts a sufficient number and variety of cases to illustrate the subject. I am

[1] Ibid., 1878, vol. i. p. 459.
[2] Ibid., 1879, vol. ii. p. 447.
[3] Lectures on Practice of Medicine, 2d ed., vol. i. p. 537.
[4] Lancet, 1885, vol. i. p. 337.
[5] Reynolds's System of Medicine, vol. i. p. 698.

led to believe and hope, however, that few omissions to refer to records of notable cases will be found.

All the cases of hereditary chorea referred to in my paper on that subject in the December number of this JOURNAL can be properly included in this present consideration of chorea in the adult. I have, with a couple of exceptions, omitted reference to them because of the very recent date of that publication.

A desire to study the lessons that might be drawn from a considerable collection of cases of this rather obscure and illy understood phase of chorea, led me to address to the chief medical officers of a number of hospitals for the insane a circular letter asking for information upon the subject, with reports of any cases at present in these hospitals. From answers received to this circular I am enabled to publish notes of thirty-three cases besides those of six other cases from this hospital, making in all thirty-nine cases for consideration.

The plan which seems most convenient and systematic for the recording of these cases is to mention in succession all cases found in each particular hospital, first giving the following points of information about that hospital:

1. Name of hospital or asylum.
2. Population of same.
3. Number of cases of chorea among the population.
4. Name and rank of the medical officer by whom the notes were furnished.

Pennsylvania Hospital, Department for Insane, Philadelphia. Population 397. One case. John B. Chapin, Superintendent.

CASE I. *Mania lapsing into dementia.*—Female, aged twenty-five years. Affected with chorea at the age of twenty years, with insanity at twenty-four years. Chorea exaggerated just after the advent of the insanity. Patient is of neurotic temperament; no rheumatism or heart trouble.

Southwestern Lunatic Asylum, Marion, Virginia. Population 200. Two cases. E. T. Brady, Assistant Physician.

CASE II. *Post-hemiplegic chorea accompanying dementia.*—Miss Mary B., aged thirty-five years, white, unmarried. Three years ago had a stroke of apoplexy, which caused total paralysis of the right side and loss of speech. She has, however, gradually regained faculty of speech and control of muscles of right side, except the right arm, which is still weaker than the left; her speech has improved slightly, and she is now able to articulate, but has amnesic aphasia. The right arm is now choreic, the motion beginning in the fingers and hand, and rapidly extending to the forearm and arm, pectoral and scapular muscles. Voluntary effort increases the jerking; motion does not entirely cease during sleep. The contractures, which usually follow long-standing hemiplegia, are beginning in this case, the hand being flexed slightly, but constantly on the forearm. No family history of insanity or chorea.

CASE III.—Luther K., male, white, aged twenty-two years. Fairly well developed; general health good; an imbecile; father demented; grandfather and uncle on mother's side insane; no history of chorea in parents or relatives. The choreic symptoms ordinary in character and general in their distribution—increased on voluntary effort, never altogether ceasing during waking hours. There is entire rest during sleep.

Lunatic Hospital, Boston. Population 190. Two cases. Theodore W. Fisher, Superintendent.

These cases represent no special form of insanity. Both are irritable or maniacal at times; emotional, hysterical, and noisy; no delusions.

CASE IV.—Female, aged fifty-six years; movements began five years ago; insanity about the same time; no history of heredity, but family history unknown. Patient had rheumatism, but there is no heart trouble.

CASE V.—Female, aged forty-three years. Was congenitally weak; date of beginning of insanity unknown, but is known to have been insane thirteen or fourteen years; chorea began many years ago; gets much excited, especially at the menstrual period.

Mississippi State Asylum, Jackson, Mississippi. Population 475. Two cases. T. J. Mitchell, Superintendent.

CASES VI. and VII.—White woman, aged thirty-five years, and colored man, aged sixty years. In both cases date of advent of chorea as well as of the insanity is unknown. No family histories. Both are free from organic heart trouble. Neither has had rheumatism.

Eastern Michigan Asylum, Pontiac, Michigan. Population 891. Three cases. C. B. Burr, Superintendent.

CASE VIII.—Man, aged sixty-five years. Chorea appeared coincidently with insanity about eleven years ago following hemiplegia, which was ascribed to exposure in the water; his movements are very exaggerated, and interfere with locomotion; no family history; no heart trouble or history of rheumatism.

CASE IX.—Woman, aged forty-eight years. Has been choreic eighteen years; insanity has existed about the same length of time. Movements are so aggravated as to interfere with locomotion. Her mental and nervous trouble followed disappointment in marriage; mother and maternal grandmother were neurotic and father intemperate; no heart trouble or history of rheumatism.

CASE X.—Female, aged fifty-nine years. Admitted to the asylum three and a half years ago, suffering at that time from confirmed mental impairment. Chorea had not been perceived previous to her admission, but it was doubtless present. It has increased in severity slowly ever since she came under treatment. Mother died of apoplexy, and father of consumption. No heart trouble or history of rheumatism.

Illinois Central Hospital for the Insane, Jacksonville, Illinois. Population 920. One case. H. F. Carriel, Superintendent.

CASE XI.—Female affected with dementia; nothing known of her ancestry; said to have been taken from an orphan asylum when seven years old.

Arkansas State Lunatic Asylum, Little Rock, Arkansas. Population 408. One case. P. O. Hooper, Superintendent.

CASE XII.—A negro, aged thirty years. Dementia; no active symptoms; a slight degree of right hemiplegia; patient thinks chorea began eighteen months ago, probably since he became insane.

Alabama Insane Hospital, Tuscaloosa, Alabama. Population 1006. Three cases. E. D. Bondurant, Assistant Physician.

CASE XIII.—Male, aged forty-eight years. Admitted in 1862 suffering from chorea and melancholia with delusions; is now demented and in feeble health; choreic movements are still well marked; no history of rheumatism; no heart disease; no history previous to admission.

CASE XIV.—Male, aged forty-five years. Admitted in 1878, then suffering from chorea, and being far advanced in dementia. Unable to give an account of himself; history previous to admission unknown; has valvular heart disease.

CASE XV.—Female, twenty-three years old; melancholia, with delusions and dementia; chorea developed three years ago; has had rheumatism, and now suffers from cardiac valvular insufficiency. Father insane.

Insane Asylum of Louisiana, Jackson, Louisiana. Population 494. One case. G. L. Perkins, Superintendent.

CASE XVI.—Female, aged forty-six; no history.

Iowa Hospital for the Insane, Independence, Iowa. Population 800. Two cases. Gershom H. Hill, Superintendent.

CASE XVII.—Matilda B., widow, aged seventy-two, mother of eight children; husband was a physician. She has been choreic fifteen years and insane during the last five years; fair general health but nervous and timid; exercises daily and is able to feed and dress herself; father and mother were insane—the former for ten years; brothers and sisters are very nervous, but it is not known that any member of the family was choreic.

CASE XVIII.[1]—Mary S., aged fifty-five, married, but has never borne a child; chorea began insidiously twelve years ago and has steadily increased, until she is now hardly able to walk, feed or dress herself; mental impairment, first noticed two years ago, has slowly increased up to the present time. An uncle is afflicted with chorea, and a brother is seriously threatened with the same disease.

Dr. Hill thinks that the hearts in both these cases are, to some extent, affected.

[1] Referred to in a paper on Hereditary Form of Chorea. AMERICAN JOURNAL OF THE MEDICAL SCIENCES, December, 1889.

State Lunatic Asylum, Utica, New York. Population 643. One case. G. Adler Blumer, Superintendent.

CASE XIX.[1]—Female, aged fifty-six, unmarried; insanity began in 1884, and was coincident with the appearance of chorea. On admission, mental condition was that of melancholia; she has since become somewhat demented. Chorea has gradually increased since insanity began. Patient's mother and maternal cousin had chorea. In the case of the mother the chorea came on during the last years of her life (a number of years after the birth of the patient). She has no heart trouble and never had rheumatism.

State Asylum for the Insane, Stockton, California. Population 1604. Three cases. Hiram N. Rucker, Superintendent.

Dr. Rucker makes the following observations on these three cases: They are all females, aged respectively, twenty-two, thirty-nine, and thirty-seven; none has heart disease. The following notes are from the commitment papers which accompanied the patients upon their admission to the hospital:

CASE XX.—Female, single, aged twenty-two, admitted June, 1888. Evidence of insanity; leaves home and wanders around aimlessly; weeps without cause; imagines she and others are to be killed; suicidal; has been insane two and a half years; mother was insane.

CASE XXI.—Female, single, aged thirty-nine, admitted in 1876. Refuses food; unable to care for herself. She has been more or less afflicted since childhood; father died in an insane asylum.

CASE XXII.—Female, married, aged thirty-seven. Wild and incoherent in talk and actions; insanity increasing; an aunt insane. Cause of insanity is stated to be chorea.

Northern Michigan Asylum, Traverse City, Michigan. Population 625. One case. James D. Munson, Superintendent.

CASE XXIII.—Male, aged sixty-five; was subject to epileptic fits during a period of five years between the ages of fifty-four and fifty-nine. He was admitted October 26, 1887, since which time he has been free from convulsions; antecedents unknown. No information in regard to cause and duration was obtainable; no heart disease or history of rheumatism.

Minnesota Hospital for the Insane, St. Peter. Population 967. One case. J. H. James, Assistant Physician.

CASE XXIV.—Male, aged fifty-five; chronic mania; duration ten years; had an attack of insanity at the age of thirty-six. Symptoms of chorea are gradually disappearing since his admission; has had rheumatism, but there is no organic heart disease.

Kansas State Insane Asylum, Topeka, Kansas. Population 729. Four cases. B. D. Eastman, Superintendent.

CASE XXV.—Male, aged forty-four; chronic delusional insanity, with violent homicidal propensity. He was first affected with chorea

some time during his service in the late war, and he has never been free from the affection since that time; the disease is regarded as being due to exposure. He first became affected with insanity four years ago. Chorea has become exaggerated since the existence of the insanity. He married after he became choreic; may have had rheumatism while in the service; no heart trouble.

CASE XXVI.—Female, aged fifty-six; chronic melancholia, with considerable degree of dementia at the present time. Insanity of five years' standing. Chorea has existed a good many years—not definitely known—but much longer than the insanity. Has had rheumatism; no heart trouble.

CASE XXVII.—Male, single, aged thirty-one; chronic mania, with dementia Insanity of some eight or nine years' duration; no information as to how long affected with chorea. No history of rheumatism; normal heart.

CASE XXVIII.—Female, aged forty-two; chronic melancholia, with suicidal propensity; chorea of ten years' standing; insanity of some three years' duration. Chorea existed before the marriage of patient and came on at the time of, or shortly after, an attack of acute rheumatism. Paternal aunt, uncle, and cousin insane.

Dr. Eastman tells me that there is a young man in the institution who had an attack of acute rheumatism last winter, during which he was choreic, but with the recovery from rheumatism the choreic condition disappeared.

This, I take it, must have been very like the acute attacks of chorea often seen in children who are suffering from rheumatism, or who have about recovered from it.

State Hospital for the Insane, Danville, Pennsylvania. Population 900. Six cases. C. B. Mayberry, Assistant Physician, first three cases; Theodore Diller, Assistant Physician, second three cases.

CASE XXIX.[1]—Male, aged sixteen years. Had chorea for ten years; brought to hospital because of excitement; during excited periods had but very slight manifestations of chorea. There are periods of varying length, during which he is free from chorea, but subject to frequent epileptic seizures. Never has a fit during the time the choreic symptoms are active. No family history of chorea, but history of nervous temperament and insanity. No heart disease; never has had rheumatism.

CASE XXX.—Male, aged twenty-three years. Imbecile with excitement; choreic since early childhood; movements very marked at the time of admission. Family of a nervous temperament, and with a history of insanity. No heart disease or history of rheumatism.

CASE XXXI.—Male, aged fifty-three years. Dementia secondary to mania. Family history shows insanity. Chorea commenced about twenty-four years ago following typhoid fever and rheumatism, which he contracted in the army.

CASE XXXII.—Female, aged twenty-six years. Imbecile; father an "alcoholic"; mother died of consumption; said to have been "loose" in

[1] AMERICAN JOURNAL OF THE MEDICAL SCIENCES, December, 1889.

morals. Patient has been feeble-minded and choreic since early childhood. She became unmanageable at home on account of petulant, quarrelsome nature, and was disposed to seek improper male companions. She has small physique; receding forehead. Two sisters died of phthisis. Four sisters and four brothers living, one sister being a patient in this hospital—admitted in 1878 at the age of twenty years and is now a case of chronic melancholia with phthisis.

Our patient is markedly choreic—movements typical—all muscles affected and equally. Speech is difficult and halting. Cessation of movements during sleep; says she cannot remember when she was not affected with the "nervous movements," and that she was unable to walk until she was six or seven years old.

Case XXXIII.—Female, aged forty-one years. Dementia secondary to melancholia attonita. Supposed cause of insanity: loss of two children within six days. Her mother was insane, the malady being of a periodic type. Upon admission (in 1878) she was a case of melancholia, but subsequently became excited, destroying clothing, bedding, etc. At present she is well advanced in dementia. She was slightly choreic upon admission, but how long before that time the condition existed is not known. Choreic movements not noted when patient is lying down quietly. Any voluntary action is executed with difficulty and in style peculiar to choreics. The movements are well seen at meal-time as patient conveys food to her mouth. Movements are entirely suspended during sleep.

Case XXXIV.[1]—Female, aged forty-seven years. Weak-minded; mother of four children; has been affected with chorea for the past six or eight years; rather spare frame, and somewhat above average height. Father, grandfather, brothers, sisters, and a son choreic. Physical condition is fair; chorea well marked; cessation during sleep.

Indiana Hospital for the Insane, Indianapolis, Indiana. Population 1530. Five cases. C. E. Wright, Superintendent.

Cases XXXV., XXXVI., XXXVII., XXXVIII., and XXXIX.—Three males, aged respectively fifty-five, forty-seven, and forty-six years; two females, aged respectively fifty-three and thirty-seven years. They are all cases of dementia. No exaggeration of choreic symptoms noted immediately before or just after the advent of the insanity. Duration of disease and family histories in these cases are unknown; hearts in all five cases affected, and all have histories of rheumatism.

State Lunatic Asylum, Fulton, Missouri. Population 500. No case. W. K. Rodes, Superintendent.

Longview Asylum, Carthage, Ohio. Population 797. No case. C. A. Miller, Superintendent.

State Asylum for the Insane, Warren, Pennsylvania. Population 686. No case. John Curwen, Superintendent.

Central Hospital for the Insane, near Nashville, Tenn. Population 430. No case. John Collender, Superintendent.

Maine Insane Hospital, Augusta, Maine. Population 600. No case. H. B. Hill, Superintendent.

[1] Ibid.

Iowa Hospital for the Insane, Des Moines, Iowa. Population 707. No case. H. A. Gilman, Superintendent.

In 23 hospitals for the insane, distributed over a wide extent of territory and containing a population of 16,499 insane persons, we find there are 39 cases of chorea, of which 16 are males and 23 females. Exclusive of Case XI., where the age is not given, we find the youngest person is 16 years old and the eldest 72 years. The average age is $43\frac{14}{39}$. The average age of the men is $44\frac{1}{16}$, that of the women $43\frac{17}{23}$. 29 of the cases are of persons 35 years of age or over, and of these 29 we find 13 are 50 years of age or over. In 14 cases there is a family history of insanity or a tendency to nervous affection, and in 3 of these we find chorea has been directly inherited.

Among thirty-two cases, in which the form of insanity is recorded, we find there are eighteen cases of dementia (Cases I., II., X., XI., XIII., XIV., XV., XIX., XX., XXVI., XXVII., XXXI., XXXIII., XXXV., XXXVI., XXXVII., XXXVIII., XXXIX.), of which three (I., XXVII., XXXI.) are secondary to mania, five (XIII., XV., XIX., XXVI., XXXIII.) to melancholia, and nine (X., XI., XIV., XX., XXXV., XXXVI., XXXVII., XXXVIII., XXXIX.) to forms of insanity the names of which are not given, and one to hemiplegia. Four (III., XXIX., XXX., XXXII.) are recorded as cases of imbecility. Two (IV., XXXIV.) are noted as emotional, childish, and feeble-minded. Two (VIII., XII.) might be considered cases of post-apoplectic insanity, and one (XXV.) as a case of chronic delusional insanity. Two (XXII., XXIV.) are cases of mania—one chronic and one acute. Two (V., XXI.) are congenital, and one (XXVIII.) is a case of melancholia.

In 28 cases, in which either or both the questions in the circular relative to rheumatism and organic heart disease are answered, we find that of 14 cases a negative reply is given to both questions; of 7 both questions are answered in the affirmative; of 3 the first received an affirmative and the second a negative answer; and of 3 more the second question is answered in the affirmative, while the first is unanswered; of 1 case the second receives a negative reply, while the first is unanswered.

39 cases of chorea in a hospital population of 16,499 insane persons would give a proportion of 1 choreic among every $423\frac{3}{39}$ insane; say, roughly, 1 to every 425.

Considering the number of asylums located in all parts of the country from which these cases are taken, it seems to me it would be reasonable to infer that the proportion of 1 choreic among every 425 insane would hold good of the entire insane population in hospitals in this country.

Considering the 16 cases, in which the length of time which the patients were affected with chorea is stated, we find the shortest period

	Name of Hospital.	Hospital population.	Number cases of chorea.	Age.	Sex.	Form of Insanity.	Length of time affected with insanity.	Length of time affected with chorea.	Family history of insanity.	History of direct hereditary transmission of chorea.	History of rheumatism.	Presence of organic heart trouble.	Remarks.
I.	Pennsylvania Hospital, Department for Insane, Philadelphia.	397	1	25	F.	Dementia secondary to mania.	1	5	.....	.....	No	No	Patient of neurotic temperament.
II.	Southwestern Lunatic Asylum, Marion, Va.	200	2	35	F.	Post-hemiplegic dementia.	...	...	None.	No	...	...	
III.	Do.	...	...	22	M.	Imbecility.	...	...	Maternal uncle and grandfather insane, father demented.	No	...	...	
IV.	Boston Lunatic Hospital	190	2	56	F.	No special form; patient is erratic, emotional, irritable.	5	5	.....	.....	Yes	No	
V.	Do.	...	...	43	F.	Congenitally weak-minded.	13-14	Long time	.....	.....	...	...	Gets much excited, especially at the menstrual period.
VI.	Mississippi State Lunatic Asylum, Jackson, Miss.	475	2	35	F.	.....	...	...	No history	.....	No	No	
VII.	Do.	...	...	60	M.	.....	...	...	.....	.....	No	No	Colored person.
VIII.	Eastern Michigan Asylum, Pontiac, Mich.	891	3	65	M.	Insanity came on after an attack of hemiplegia.	11	11	.....	.....	No	No	
IX.	Do.	...	...	48	F.	.....	18	18	Yes.	.....	No	No	Movements very exaggerated.
X.	Do.	...	...	59	F.	Dementia.	3½	Long time	Mother died of apoplexy.	.....	No	No	Choreic movements slowly increasing.
XI.	Illinois Central Hospital for the Insane.	920	1	...	F.	Dementia.	Long time.	Long time.	.....	.....	...	...	Said to have been taken from an orphan asylum at the age of seven.
XII.	Arkansas State Lunatic Asylum, Little Rock	408	1	30	M.	Apoplectic.	...	1⅓	.....	.....	...	...	Had right hemiplegia.
XIII.	Alabama Insane Hospital, Tuscaloosa.	1006	3	48	M.	Dementia secondary to melancholia	27	27	.....	.....	No	No	Movements well marked.
XIV.	Do	...	...	45	M.	Dementia.	11	11	.....	.....	...	Yes	
XV.	Do.	...	...	23	F.	Dementia secondary to melancholia	...	3	Father.	.....	Yes	Yes	
XVI.	Insane Asylum of Louisiana, Jackson, La.	494	1	46	F.	.....	...	...	.....	.....	...	...	No history.
XVII.	Iowa Hospital for the Insane, Independence, Iowa	800	2	72	F.	.....	5	15	Father and mother insane.	No	...	Yes?	Brothers and sisters nervous.
XVIII.	Do.	...	...	55	F.	.....	2	12	.....	Uncle and brother.	...	Yes?	Chorea steadily increasing.
XIX.	State Lunatic Asylum, Utica, New York.	643	1	56	F.	Dementia secondary to melancholia	5	5	.....	Mother & maternal cousin.	No	No	Chorea gradually increasing.

XX.	State Asylum for the Insane, Stockton, Cal.	1604	3	22	F.	Dementia (secondary).	2½	...	Mother insane.	.....	...	...	
XXI.	Do.	...	...	39	F.	Congenital.	...	...	Father.	.....	...	...	Cause of insanity, heredity.
XXII.	Do.	...	...	37	F.	Mania.	...	...	Aunt.	.....	...	...	Cause of insanity, chorea.
XXIII.	Northern Michigan Asylum, Traverse City.	625	1	65	M.	.....	...	...	.....	.....	No	No	Had epileptic fits between ages of 54 and 59.
XXIV.	Minnesota Hospital for Insane, St. Peter, Minn.	967	1	55	M.	Chronic mania.	10	Chorea.	.....	.....	Yes	No	
XXV.	Kansas State Insane Asylum, Topeka, Kan.	729	4	44	M.	Chronic delusional insanity; very homicidal.	4	25	.....	.....	...	No	Chorea exaggerated since advent of insanity.
XXVI.	Do.	...	...	56	F.	Dementia secondary to melancholia	5	Much longer than insanity.	.....	.....	Yes	No	
XXVII.	Do.	...	...	31	M.	Dementia secondary to mania (chronic).	8-9	...	.....	.....	No	No	
XXVIII.	Do.	...	...	42	F.	Melancholia with suicidal propensity	3	10	Paternal aunt, uncle, and cousin.	.....	...	...	Chorea appeared immediately after an attack of rheumatism.
XXIX.	State Hospital for the Insane, Danville, Pa.	900	6	16	M.	Imbecility.	Congenital.	10	Yes.	.....	No	No	Epileptic convulsions noted when choreic movements cease.
XXX.	Do.	...	...	23	M.	Imbecility.	Probably congenital.	Since early childhood.	Yes.	.....	No	No	
XXXI.	Do.	...	...	53	M.	Dementia secondary to mania.	Long time.	24	Yes	.....	Yes	Yes	Chorea came on after attack of rheumatism.
XXXII.	Do.	...	...	26	F.	Imbecility.	Congenital.	Congenital.	Father alcoholic; no connection.	.....	No	No	Family history of phthisis
XXXIII.	Do.	...	...	41	F.	Dementia secondary to melancholia	11	Longer than 11 years.	Mother.	.....	...	...	Cause of insanity, loss of children.
XXXIV.	Do.	...	...	47	F.	Emotional, feeble-minded.	6	8	.....	Grandfather, father, brothers, and sisters, son.	No	No	Movements well-marked; cessation during sleep.
XXXV.	Indiana Hospital for Insane, Indianapolis, Ind.	1530	5	55	M.	Dementia.	...	...	.....	.....	Yes	Yes	
XXXVI.	Do.	...	...	47	M.	Dementia.	...	...	.....	.....	Yes	Yes	
XXXVII.	Do.	...	...	46	M.	Dementia.	...	...	.....	.....	Yes	Yes	
XXXVIII.	Do.	...	...	53	F.	Dementia.	...	...	.....	.....	Yes	Yes	
XXXIX.	Do.	...	...	37	F.	Dementia.	...	...	.....	.....	Yes	Yes	

State Lunatic Asylum, Fulton, Mo.	Population 500 (report of 1882).	No cases of chorea.
Longview Asylum, Carthage, Ohio.	" 797.	No cases of chorea.
State Hospital for Insane, Warren, Pa.	" 686.	" " "
Central Hospital for Insane, Nashville, Tenn.	" 430.	" " "
Maine Insane Hospital, Augusta, Maine.	" 600.	" " "
Iowa Hospital for Insane, Des Moines, Iowa.	" 707.	" " "

given to be a year and a half, the longest twenty-seven years, and the average nearly twelve years.

In 18 cases the length of time in which insanity was supposed to have existed is given; the shortest period stated is one year, the longest twenty-seven years, and the average about eight years.

The congenital cases are not taken into consideration in calculating either of the above averages.

The difficulty of obtaining accurate histories in these cases, the large majority of which are pauper insane, must not be overlooked. I have no doubt that, owing to this difficulty, many of the figures given as to length of time of duration of chorea and of insanity are inaccurate, but with certain reservations the figures above given may be accepted. I believe that if it were possible to collect exact data on these points a greater difference in these figures than that here given would be found to be true.

It is a significant feature of this part of the table that in no case is it recorded that the insanity existed before the chorea, although in several cases (IV., VIII., IX., XIV., XIX.) the two affections appeared coincidently.

It will be observed that while no large number of choreics is found in any one hospital for the insane, yet there are comparatively few hospitals that have no case of this kind among their populations.

If these 39 cases teach anything, they surely teach that in long-standing chorea there is a strongly marked tendency to active insanity or mental impairment of some sort, both of which ultimately terminate in a condition of dementia. The evidence supporting this proposition is the fact of the existence of 1 case of chorea among every 425 insane people. This proportion of choreics to insane persons must be many times greater than that to be found in the general population outside of hospitals the country over.

The chronic form of chorea must, I infer, be of exceeding great rarity among our ordinary population, else we would not find such meagre accounts of it, or its existence wholly ignored by systematic writers on nervous and mental disease.

Coming now to consider the sex in these cases, we have seen that 16 are males and 23 females—about two-thirds as many of the former as the latter. This is probably not far from the proportion of one sex to the other, as seen in the ordinary chorea of childhood.

There is much to consider in the forms of insanity affecting these cases. Dementia, we have seen, is the mental condition found most frequently, and in the majority of cases it is recorded as being secondary to other forms of insanity. In one of Brady's cases (II.) there are noted symptoms of mental deterioration, common after an attack of apoplexy and with the complication of *local* choreic movements. Cases VIII. and

XII. are not stated to be cases of dementia, but it is not unlikely they will terminate in that condition; but in both these cases the insanity was due to an attack of apoplexy, and most likely the chorea too. Four cases are imbeciles. Several others are congenital cases, and it is a significant fact that we find only two cases of mania, and one of these in the chronic form—probably with some degree of dementia. There is but one case of melancholia.

From the table it would appear chorea existed on the average about four years before symptoms of insanity were noted. The long time one or both these affections—insanity and chorea—have existed in many of the cases makes it fair to conclude that chorea, superadded to insanity, does not have a marked effect in shortening the life of the individual, but, on the contrary, the condition is compatible with a fair length of life with a moderate degree of physical health. In only one case is it noted that the choreic movements are decreasing, in all others they are slowly increasing or stationary.

A family history of insanity in these cases is probably found about as frequently as we find it among the ordinary population of hospitals for the insane.

In the majority of the cases the cause of the chorea and insanity is not given. Of the causes stated we find a considerable variety. Cases XXVIII. and XXX. coming on immediately after an attack of rheumatism would probably come within the meaning of the term rheumatic insanity as used by Clouston, Bucknill and Tuke, Griesinger, and others. It would correspond to the chorea arising in children during, or just after, an attack of rheumatism, with this difference and addition, that in these two cases the chorea became chronic and mental symptoms ensued.

Eastman's case, in which chorea attacked an adult who was suffering from acute rheumatism and terminated in a short time, would seem to be identical with the chorea of children.

In only three cases do we find a direct hereditary transmission of chorea to have occurred, but Dr. Hill notes that two patients have been inmates in the Iowa Hospital, in which this hereditary transmission of the affection appears to have taken place. I have not included these two cases in the table, because they are not residents in the hospital. In only one case (XXII.) is chorea given as the cause of insanity, but it seems reasonable to conclude that in all these cases chorea alone, or in conjunction with other etiological factors, operated more or less powerfully in the causation of the various mental deflections. I maintain this deduction principally from the fact, that in these cases, without exception, the insanity never appeared before the chorea. In a few cases the two were noted coincidently, but in the large majority of cases the mental disorder became apparent only after the patient had been choreic a considerable length of time—the average length of this period,

as shown by the table, being about four years. Why should not a person become insane who is subject to this distressing affliction? The embarrassments, the feelings of helplessness and despair, the constant attention to self—the constant dwelling of the mind on the affection—ever present—these, together with the feeling of despondency in the knowledge that his usefulness in life is over, and that he is only an object of pity, charity, and care for his friends would seem to me to be potent factors in bringing about gradually a certain mental impairment or enfeeblement of the mind which would progressively increase, and finally end in dementia.

In cases of post-hemiplegic chorea, it would seem most plausible to account for the movements, as well as the mental symptoms, on the hypothesis that there is a coarse irritation or destruction of some portion of the motor area of the brain or the motor tracts, proceeding from that region. In cases where the choreic movements are localized, and confined to the side or the single limb which had been paralyzed at the time of the apoplexy, this, I believe, to be the only conclusion which can be supported logically.

W. Bevan Lewis's careful report of a case of localized paresis with choreiform movements is of great interest in this connection. The finding of local cortical disease *post-mortem* made his record complete. I believe, however, that in all cases of chorea an organic lesion of the brain (and in some cases, perhaps, of the cord also) exists. This lesion may be gross or fine, and would in some cases be easily demonstrated *post-mortem*, while in other cases it might defy detection by our present means of investigation. Of course, only careful *post-mortem* investigations can establish the truth or the falsity of this theory.

In my first paper I expressed my adherence to the view which, I think, is now commonly accepted, that chorea is a disease of the brain, and essentially of the motor apparatus—whether of the ganglia or the associated nerve-tracts. However, if a general sclerosis of brain and cord should in a given case be the particular lesion present, it would not be unreasonable to believe that the same diseased process operating on the analogous parts of the cord would intensify or exaggerate, in a measure, the choreic movements above what they would have been had the brain alone been the seat of disease. That the cord is primarily or essentially the seat of disease does not, in the light of our present knowledge of the subject, seem to be a view which can be consistently upheld. The evidence upon which rests the theory that the lesion is primarily in the motor apparatus of the brain is ingenious, but cannot well be discussed in this place.

In the causation of insanity among choreics it would appear, generally, that two causes operate principally, namely, the psychical causes I have enumerated, *plus* some organic lesion—coarse or fine—of the brain.

We have seen that one-third of the cases have family histories of insanity. This would seem to show that in persons with malformed, impaired, or aberrant brain development there is a peculiar susceptibility to chorea. Among 16,000 insane persons there must be several hundred cases at least, in which a family history of insanity can be traced. Only the comparatively small number of 13 have developed chorea. What is the peculiar susceptibility or especial vulnerability in these cases having a family history of insanity? The correct answer to this query might go far in the way of shedding light upon the cause of insanity itself. The two cases (XXIII. and XXIX.), in which epilepsy and chorea existed in the same person, are of especial interest in this connection, as showing a close connection between these two diseases of the motor apparatus of the brain.

Let us now give some attention to rheumatism as a cause of chorea and insanity. We have good authority for the statement that rheumatism may act as the direct cause of insanity (Clouston, Griesinger, Bucknill and Tuke). The evidence that rheumatism is a direct cause of chorea in children is so overwhelming that the subject need not be discussed here; the points in dispute, at present, being as to the relative frequency with which the cause operates, and the *modus operandi* by which rheumatism, or product thereof, produces chorea. The claims made by some that as many as from 20 to 50 per cent. of chorea in children is due to rheumatism is not sustained by the most careful of the recent investigations in this field. Probably 8 per cent. or 10 per cent. will be found to be the proportions which would represent the ideas of the later authorities. Broadbent and Hughlings-Jackson, and others who have labored so well in this field, have maintained the theory that chorea is caused by many minute emboli which are detached from the valves of the heart during or soon after an attack of rheumatism. The evidence adduced in support of this proposition consists of macroscopic and microscopic appearances in a number of cases, and we find to-day the theory accepted by the great majority of the profession.

Now, on the other hand, I think it is proven beyond the peradventure of a doubt that chorea may arise in children who have been free from rheumatism in any form, and who possess normal hearts. Some of the earlier investigators, in their enthusiasm, erred in pushing too far the application of the "embolic theory"—some, indeed, going so far as to say that this was the sole cause of chorea.

In our table ten cases are reported as having had rheumatism, seven of whom now have heart disease. In two of these cases it seems most probable that rheumatism and heart disease were the causes of the chorea, and the chorea in turn of the insanity. In some, indeed all the other eight cases, the rheumatism may have been the cause of chorea also; but it must be borne in mind that rheumatism is a common disease,

and that it is by no means certain that in a case of chorea with history of having had rheumatism, that the chorea has been caused by the rheumatism, or resultant heart affection. An eminent writer has gone so far as to maintain that as many as 20 per cent. of the general population have had rheumatism. This being about the same proportion as he found in his collection of cases of chorea, the conclusion was drawn that rheumatism acts not at all as a cause producing chorea.

The large number of cases in our table in which the patients are free from heart trouble and have negative histories as to rheumatism, makes the conclusion inevitable that in the majority of the thirty-nine cases rheumatism or heart trouble does not figure as an etiological factor. Probably the proportion of rheumatics among these cases would not differ greatly from that found among the same number of children. In this respect the hereditary form of chorea differs, as we have seen before, from other forms of the disease found among adults in that rheumatism is seldom an antecedent.

It would appear, from all that can be gathered from the reports of these cases, that a considerable variety of causes may operate to produce chorea; that in many cases two or more causes act together. These causes could be divided into predisposing and exciting. Inherited mental or nervous weakness or deterioration being the most prominent under the first head, and rheumatism, with heart disease, apoplexy, fright, physical distress, exposure, etc., being some of the more conspicuous examples in the second division.

Many, or, indeed, most of the causes which will produce chorea are also among the common causes of insanity; but chorea itself is a cause of mental disease. Hence it would be only logical to expect insanity to ensue in these long-standing cases of chorea.

Conclusions.—1. There is to be found among the insane in hospitals and asylums in this country 1 choreic among each 425 of population.

2. In all long-standing cases of chorea there is a more or less marked tendency to mental deterioration which, in many cases, progressively increases, and finally terminates in dementia.

3. Many cases, even when there exists a considerable degree of mental impairment associated with chorea, enjoy fair physical health and apparently live almost as long as they would have done had they been free from the mental and nervous affections.

4. The proportion of male to female adults is in about the same ratio as is found to exist between the sexes in children affected with acute chorea.

5. The same causes that are known to produce chorea in children are found to operate in causing the disease in adults; but in the case of the latter, additional causes peculiar to adult life, such as apoplexy, anxiety, etc., are capable of producing the disease.

Emotional causes may produce chorea when operating on a person already predisposed to the affection.

A person having a family history of insanity, chorea, or epilepsy, or, indeed, any nervous affection, is predisposed to an attack of chorea.

Persons popularly known as "nervous" are especially predisposed to an attack of chorea; but when the disease is noted to exist in phlegmatic robust persons it is probably the result of rheumatism or coarse brain lesions.

6. Persons of adult years are sometimes, though rarely, attacked with chorea while suffering from rheumatism—the disease being of about the same character as that commonly observed in children, but more likely to become chronic.

7. As to the pathology, the following appear to be reasonable conclusions:

(*a*) A number of cases arise from, and are caused directly or remotely by, an attack of rheumatism.

(*b*) In the majority of cases heart disease is absent and there is a negative history as to rheumatism.

(*c*) Coarse lesions, acting as irritants to the motor cells of the brain or the tracts proceeding therefrom, are in some cases the prime cause. Such lesions most commonly are clots recent, organized, or broken down.

8. Chorea is to be found at all ages.

9. Persons may inherit the disease directly.

10. The disease may be congenital.

11. Chorea and epilepsy are intimately related to each other. Epileptic convulsion (Jacksonian) may be confined to a single member; the same is true of choreic convulsions.

I wish to thank heartily all the gentlemen who so kindly and promptly replied to my circular. Many of the letters were of considerable length, and the preparation of most of them necessitated the expenditure of a good deal of time and labor. Some of the reports are very brief because little or nothing was known of the patient's history, but each is of some value, as illustrating at least a few points of interest in connection with the subject.

For valuable assistance in correcting proof I am indebted to my colleagues, Drs. G. R. Trowbridge and Hugh B. Meredith of this hospital.

THE PLACE OF THE SEA VOYAGE IN THERAPEUTICS.

By James Alexander Lindsay, M.A., M.D.,
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The fact that travel is a powerful agent for the restoration of health was well known to the ancients. In a celebrated ode the poet Horace addresses the ship which was about to convey his friend Virgil to Greece for the benefit of his health:

> Navis, quæ tibi creditum
> Debes Virgilium, finibus Atticis
> Reddas incolumem, precor,
> Et serves animæ dimidium meæ.

Among the precepts of Galen we find the statement, amply verified by the experience of subsequent generations, "In morbis longis solum vertere conducit." Yet the sea voyage, as we understand it when advising the invalid to try its efficacy, is an essentially modern idea, which has only been rendered practicable by the progress of navigation, by discovery, and by the application to travel of the comforts and conveniences of an age of science and civilization.

By a sea voyage the ancients would have understood a journey by ship around the shores of Italy, Sicily, or Greece, or, at most, a more adventurous cruise to Tyre or Alexandria or Massilia. To them the Bosphorus, on the one hand, and the Pillars of Hercules, on the other, marked off the limits of civilization and of practicable navigation, beyond which were darkness, peril, and barbarism. In the Middle Ages, before the discoveries of Columbus, Vasco di Gama, Tasman, Magellan, and other heroes of the ocean, the range of a sea voyage was hardly more extended. Even when discovery had opened up the path to the great Western world and to the Antipodes, it was long before distant voyaging became sufficiently familiar, safe, and comfortable to tempt the invalid from his home. Within the memory of persons still living the voyage to the Australian colonies was usually made in ill-founded little vessels of two hundred or three hundred tons burthen; five, six, and seven months were commonly required for the passage; the staples of diet were salt beef or pork and mouldy biscuits, and every gale involved great discomfort and often severe privations. Under such conditions the voyage for health was not likely to become popular. Now all is changed. The progress in ocean navigation during the past thirty years almost exceeds belief. Not a day passes without some magnificent steamship or stately clipper leaving our ports for the most distant parts of the earth. Two thousand tons for sailing vessels and four or five thousands for steamers is the usual burthen; the speed attained is frequently from twelve to fifteen knots per hour,

and the passage is now accomplished in weeks where formerly months were required. The comfort of passengers at sea, though still capable of improvement, has been very successfully promoted, and upon good lines life is hardly less pleasant than in the most luxurious home, the drawbacks being chiefly such as are inevitable to such a limitation of space as is inseparable from shipboard. Even the tempest has lost much of its terror, and its discomforts are reduced to a minimum upon the large, safe, and powerful vessels which now monopolize the passenger trade.

It is obvious that under such conditions as those just enumerated the sea voyage gets an excellent chance of exerting whatever therapeutic virtue it may possess, and there is no doubt that its popularity with invalids has advanced by leaps and bounds during the last two or three decades. Few favorite vessels now start for Australia or New Zealand without reckoning upon their passenger list several persons whose motive for travel is the pursuit of health. Some large trading vessels lay themselves out specially for this class of passengers, and many are the "steam-yachts" and "pleasure steamers" which strive to tempt the consumptive, the hypochondriac, or the jaded brain-worker to try the healing effects of a few weeks' or months' cruise upon the summer seas and amidst

> The isles that gem
> Old ocean's purple diadem.

It is the purpose of the present paper to inquire how far this new fashion in medicine rests upon a solid foundation, to define its area of usefulness, to point out how it may be turned to the best account, and to indicate some of its dangers. In order to accomplish these ends we shall require to consider in succession:

I. The climate of the sea;
II. The mode of life at sea;
III. The general influence upon health and disease of sea climate and sea life; and,
IV. The suitability of the sea voyage for certain definite maladies.

I. The Climate of the Sea.

It is obvious that the climate of the sea must present great variations. Between the climate of the Arctic Ocean and the Bay of Bengal, between that of the Red Sea and the mid-Atlantic, great difference, consequent upon latitude, prevailing winds, and the proximity or distance of great continents must necessarily exist. Yet we may, without abuse of language, talk of a sea climate in a sense in which we cannot talk of a land climate. At sea, certain conditions having an important influence upon climate are invariable, viz.: a uniform flat surface, a uniform surface material, salt water, a free access of air, and freedom from the

various sources of atmospheric contamination which prevail more or less everywhere on shore. On land, inequalities of surface, mountain chains and deep valleys, affect the distribution of sunlight, radiation, evaporation, etc. Differences in surface-material—forest, lake, snowy summits, parched plains, cultivated fields—modify climate in a host of ways upon which it is unnecessary to dwell. Putrefaction, miasmatic exhalations, smoke, poisonous gases issuing from factories, sewage emanations combine to vitiate the atmosphere. Hence there is no such thing as a land climate in any strict sense of the word. A sea climate we may, within certain limits, correctly speak of, and its characters will be found to be: (1) Purity of the atmosphere; (2) Humidity; (3) Equability. Other minor points will presently be pointed out; but, speaking broadly, when we send our patients to sea, we should keep in view that we are subjecting them to a climate of which the leading characteristics are the purity, humidity, and equability of the atmosphere.

(1) Of the purity of the ocean air little need be said. That purity is as nearly as possible absolute. Once in a while a vessel upon the high seas is visited by a shower of fine dust, caught up, no doubt, by some atmospheric commotion on some neighboring continent and whirled out upon the ocean; but with such rare and insignificant exceptions, the air at sea presents no organic contamination whatever. It does contain something which it would be inaccurate to describe as an impurity—viz., "sea-dust"—fine particles of salt water blown about by the winds and forming an appreciable element in the air of respiration. This may, however, be safely eliminated from any enumeration of sources of impurity. High mountain air is also remarkably pure; but it may be safely affirmed, however paradoxical it may sound, that not even the keen air blowing round the icy dome of one of the higher Alps is so pure as the atmosphere of the ocean.

(2) Sea air is, as might be expected, everywhere somewhat humid. This is seen by its effects upon boots, clothing, books, etc., which frequently become mildewed at sea. The difference between the dry and wet bulb is usually from 2 to 4, and only exceptionally rises to 6 or 7. The relative humidity not infrequently exceeds 90, and occasionally even touches the point of saturation. The humidity, though everywhere considerable as compared with the average of continental climates, varies considerably. It is less in the bright and somewhat dry air of the northwest trade winds than in the leaden atmosphere of the zone of equatorial calms, where the steamy air reminds one of a vapor bath. Nevertheless, the variations of humidity at sea are much less than upon land, and (more important still) they are never sudden. The hydrometric condition of the ocean air is a stable one.

(3) Upon the high seas temperature is exceedingly equable, the diurnal variation rarely exceeding 4° or 5°, whereas in the comparable equable

climate of the British Islands the diurnal variations is often 15° to 20°, and in less equable climates this figure is largely exceeded. The writer has seen the thermometer fall 40° in half an hour with a sudden change of wind at Melbourne. Not only are the changes of temperature from hour to hour and the differences between day and night trivial at sea, but the changes from day to day are remarkably small and fairly constant with the latitude. A sailing vessel running south from one of the English ports will take from twenty to thirty days to reach the equator, and the change of temperature during that time will not much exceed one degree per diem. It is hardly necessary to say that in a swift steamship the changes of temperature from day to day are much greater. This is one of the points most necessary to bear in mind when weighing the relative advantages of a steamer and a sailing ship. These remarks regarding the equability of sea air apply only to the open ocean. They are inapplicable to such inland seas as the Mediterranean or the Red Sea, where sudden and dangerous perturbations of temperature are far from uncommon.

We have hitherto only dwelt upon those climatic characteristics which are more or less common to all the high seas. We may now add others which, though hardly universal, are yet practically so, inasmuch as they are found in all regions likely to be traversed by the invalid. Foremost amongst these must be placed—

(4) Abundance of sunlight. The "sun-bath," so justly lauded by the advocates of the high altitude treatment of consumption, may constantly be enjoyed at sea in great perfection. Clouds are, it is true, very frequent at sea, and the absolute freedom from cloud so common at Davos, St. Moritz, and in Colorado, is rare upon the ocean; but often, as, for example, in the trade wind belts, the cloudiness amounts to nothing more than a slight haze which acts as a grateful veil to mitigate the fervor of the sun. In the equatorial belt of calms cloudiness is the rule, but in the South Pacific the "brave west winds," which there prevail so greatly to the advantage of the mariner, are usually accompanied by a bright atmosphere.

(5) Another characteristic of sea air worthy of note is the abundance of ozone, which probably exerts a powerful influence upon the nervous system.

(6) The last point to be noted is the high range of barometric pressure which prevails at sea and which adds its quota to the general equability of the ocean climate.

To sum up briefly this part of our subject: the climate of the sea is characterized by the purity of its air, by its humidity, by its richness in sunlight and ozone, and by its equability as regards (α) temperature, (β) hygrometric condition, and (γ) barometric pressure.

Before discussing the effects which such meteorological characteristics

may be expected to exert upon the organism, let us, as a necessary preliminary for the fuller understanding of the subject, look at the second point in our discussion—viz., the mode of life at sea. We shall then be better prepared to consider the combined influence upon the body in health and disease of sea climate and sea life.

II. The Mode of Life at Sea.

The most characteristic feature of life at sea is the combination of rest and passive exercise which it affords. The voyager enjoys complete muscular repose, while at the same time he is in constant motion. He is soothed by the first; exhilarated by the second. He enjoys in a manner hardly practicable on land repose without *ennui*, restfulness without stagnation. This peculiar combination of conditions on shipboard has hardly received the attention which it deserves, the element of rest commonly monopolizing attention to the neglect of the element of motion. Yet it can hardly be questioned that the combination of the two is in many conditions of the highest importance. A patient who is unable to take regular walking or riding exercise, and who is fatigued even by the motion of a carriage, can remain all day long in his easy chair on the deck (provided the weather be favorable), soothed by soft winds and cheered by the agreeable sense of constant progress. More robust patients can secure the requisite *quantum* of muscular exercise by regular walking or by joining in the various games which are devised and practised with much ingenuity on shipboard.

Persons who on shore are habitually energetic, become strangely inert on shipboard, the explanation being in part, at least, the fact that the motion of the ship satisfies their instinct of constantly doing something. Other factors, however, play their part in generating this restful feeling. It is difficult for those who have never taken a long voyage to realize how completely most of the commonest worries and excitements of life are withdrawn at sea. There are no newspapers, letters, or telegrams. There are no trains to catch, no appointments to keep; no visitors need be expected, no startling news need be apprehended. The morning brings no iron routine of duty to be faced; the evening brings few, and only the mildest excitements. In eating, sleeping, reading, conversation, and trifling amusements the time slips away. In some persons—such as men overtaxed by the labor and excitement of professional or commercial life, this restfulness is invaluable. Has it any drawback? Are tedium and *ennui* to be seriously dreaded?

The answers to these questions must depend upon the character of the patient; upon the nature of his ailment, his powers of self-amusement, the company in which he is placed, and upon the length, fortunes, and comfort of the voyage. No doubt there is much monotony on ship-

board. Sky and sea, though ever changing, are ever the same. One day succeeds another with but slight variety of scene, incident, or experience. Yet if the patient be moderately well, if he has a congenial companion, if he has the faculty of making friends with reasonable readiness, if he possesses a love of books, of science, or of music, he need never dread the tedium of a long sea voyage. A ship's company, though apt to split up in cliques, and to develop strange antipathies, is compelled by the exigencies of the case to be sociable. There is but one promenade—the deck; but one eating-room—the dining saloon; but one lounge for each sex—the smoking-room for gentlemen and (in some ships) the boudoir for ladies. Acquaintanceships are readily formed under such circumstances; friendships may follow. A community of occupation and amusement breaks down barriers and dissolves impenetrability. Music is a great bond of music amongst its devotees. Above all, a love of books and of science is an unfailing distraction. The opportunities for cultivating science on shipboard may seem meagre. In reality they are ample. The sky nightly offers itself for astronomical observation. Navigation may be studied. Every bucket of sea water contains material for a week's microscopy. A fishing hook may draw up a shark, a porpoise, or a dolphin; a petrel, a boatswain-bird, or an albatross may be snared. If it be retorted that for such studies the invalid has neither faculty nor strength, it may be rejoined that for some of them at least he has the strength, and that the love of such things grows by what it feeds on. A well-filled, well-disciplined mind is an incalculable boon to the invalid, whatever his malady, whether curable or incurable.

Sea life has, however, its inevitable drawbacks, and those must be freely allowed. Foremost amongst these must be reckoned the discomforts inseparable from a small and often overcrowded sleeping apartment. There seems no escape from this evil; but the passenger who can afford the high figure demanded for the exclusive use of a good cabin will find that he has made a very good investment for his money. Again, occupation and amusement are much restricted on shipboard. Many of the pleasures of life are absent. One traveller misses his club, another his horse, a third his garden. These things must be tolerated with as much philosophy as possible. Perhaps the most serious discomforts of all are those incident to long spells of bad weather, during the continuance of which amusement is at a standstill, exercise is impeded, food is served with difficulty, and sleep is broken. Yet these evils are apt to be too seriously apprehended by the landsman. During the voyage commonly undertaken for health, viz., that to the Antipodes, bad weather is certainly the exception, fine weather the rule. If average luck be met with, the voyager will in all probability have four fine days to one bad one. Further, one gets used to even rough weather at sea, and

after a couple of months' voyaging the traveller will readily tolerate a gale which would have caused him much discomfort and some suffering at an earlier stage.

This seems the most suitable opportunity for saying a few words upon the relative merits of a steamer and a sailing vessel, as the mode of life differs materially in the two. A steamer travels much more rapidly than a sailing vessel, and everything on board is at a correspondingly higher pressure on the former than on the latter. Passengers are usually more numerous on a steamer; they are commonly of a gayer class; amusements are more numerous and more boisterous; money circulates more freely, hours are later, noises more abound: there is greater speed, more definite progress, more life and animation; often better food, but less quiet, less space, less of the true marine flavor and quality of life. The constant noise of the engines and vibration upon a steamer are distressing to very nervous patients, and the smells from the machinery and the bilge-water are often very disagreeable. The points in favor of steamships are the superior *cuisine* which they commonly possess, the assurance of a regular and speedy voyage, and the avoidance of any prolonged delay in the region of the equatorial calms. On the whole, steamers are more suitable for the healthy; sailing vessels, if thoroughly comfortable and well found, for the invalid.

Let us now consider the third branch of our inquiry, viz.:

III. The General Influence upon Health and Disease of Sea Climate and Sea Life.

That influence may be summed up as (*a*) tonic and (*b*) sedative. The tonic influence is shown by augmented appetite and improved digestion and sanguinification. The sedative influence is shown by improved sleep and sometimes by a fall in the bodily temperature. That sea air and sea life should be a tonic is natural. The purity of the atmosphere, the long hours spent in the fresh air, the traces of iodine, bromine, and sodium that are found in the sea air, the abundance of sunlight and of ozone, the constant motion—all these are tonic conditions. The improvement of appetite and the gain in weight are usually very striking at sea. Sometimes this is preceded by a period characterized by languor and "biliousness," due to sea-sickness, changed diet, altered mode of life, and mental depression following the rupture of home ties; but this period is rarely long continued, and in the great majority of cases is succeeded by a period of great digestive activity. Flint records a case in which a gain in weight of ten pounds took place during the voyage across the Atlantic in a sailing vessel, and another case in which a gain of twenty-five pounds was effected during a voyage to China. The writer has known a healthy man gain ten pounds in a fortnight at sea, and has known a

consumptive gain from thirty to forty pounds during a voyage *via* the Cape to India. It is surprising how good the appetite keeps on shipboard, even in the warm latitudes, and how much more solid and heavy food is commonly consumed at sea in the tropics than could be tolerated during the prevalence of summer heat in the British Islands. The gain in weight at sea is often so phenomenal, that to explain it we must recollect the peculiar combination of vigorous digestive power with physical inactivity which there prevails. The voyager eats well and digests well, and the wear and tear of life being reduced to a minimum, he naturally grows fat.

The question will naturally arise whether this remarkable gain in weight is altogether wholesome, and whether bad consequences may not ensue upon landing? The answer to this must turn largely upon the amount of exercise which the voyager takes on shipboard. If he systematically neglects regular exercise, he may arrive in port too fat and "out of condition," like a horse that has been allowed to feed to excess on rich meadow grass; but if he practises a firm adherence to rule in the matter of walking exercise and a reasonable moderation in the use of the more fattening articles of food, no such evil result need necessarily follow. It would be well, however, if invalids at sea would recollect that the records of the weighing machine, which are received with such interest week by week, are not an infallible index of progress in health.

Sea air and sea life are also (*b*) sedative. This is the result of the humidity of the air, the high range of barometric pressure, and the equability of the sea climate as regards temperature and hygrometric condition. The conditions of life—the freedom from labor, worry, and excitement, and the monotony of occupation—are also in general of a sedative character. This sedative influence is shown by the improvement in sleep which usually follows after an initial period often marked by troublesome insomnia, and by the mitigation of nervous irritability.

Does the sea depress as well as soothe? Sometimes, but indirectly rather than directly. The idea that the ocean is a melancholy place finds wide expression in the literature of many nations, and is a natural view for a landsman. The lonely waste of waters, the moaning of the winds, the unbroken, monotonous expanse of sea and sky, the separation from humankind and human interests: these seem to make for melancholy. Yet so homelike may a ship become, and so close the ties between the ship's company, that life at sea is often much more lively and sociable than that led by a large proportion of persons on shore. If a patient is melancholy at sea, the fault must lie either with disease incapacitating him for society or natural disinclination withdrawing him from it, or he must be more than usually unfortunate in the character of his associates.

Regarding the general influence of sea climate and sea life upon

disease little can be said to advantage, speaking in the abstract. Suffice to say that the very general idea that a voyage tends to light up the slumbering embers of disease, and to transform chronic into acute conditions is not confirmed, but rather negatived, by the writer's experience. Instead of speaking of disease in general, it will be more to the purpose to pass on at once to the last division of our subject, viz.:

IV. The Suitability of the Sea Voyage for Certain Definite Maladies.

The facts hitherto dwelt upon are uncontroversial, and will not be disputed by any one possessing a practical knowledge of the subject; but the applicability of the sea voyage to disease raises many interesting and difficult questions, regarding which there is a wide divergence of view. It will serve to clear the ground if we first exclude many types of disease, for which there is practical agreement that the sea voyage is unsuitable. It is unsuitable for all acute inflammatory conditions; it is unsuitable for all cases requiring regular surgical treatment; it is unsuitable for cases of insanity and for skin diseases; it is unsuitable for all persons who are, or are likely soon to become bedridden; for the very aged, for those greatly enfeebled from any cause, for those who can preserve health only by rigid adherence to a peculiar dietary, for those who have a special proclivity to sea-sickness. It is of very doubtful applicability to cases of organic disease of the heart, kidneys, or brain; but such cases must be judged upon their merits, no general rule being possible; and it is for the most part likely to prove injurious in that class of affections to which we apply the vague term "rheumatic." There remain the following cases in which the sea voyage has proved of signal utility, viz.: (*a*) Nervous breakdown; (*b*) impaired convalescence after pneumonia, pleurisy, one of the specific fevers, or surgical operation; (*c*) scrofulous affections of joints and glands; (*d*) hay-fever; (*e*) laryngitis; (*f*) consumption.

A few words will be sufficient regarding the first five classes, and then we shall deal more fully with the more difficult and debatable subject of consumption.

(*a*) In *nervous breakdown*, whether from overwork, worry, or intemperance, the effect of a sea voyage, if wisely regulated, is often of immense value. In such cases a sailing ship is, *cæteris paribus*, preferable to a steamer; congenial companionship is indispensable, and some variety of light and agreeable mental occupation should be regularly pursued. In milder cases of this kind, and in cases where time is limited, great benefit will probably accrue even from a short voyage to the Mediterranean or to the West Indies. A reasonable amount of comfort must be assured for such patients, or the voyage may have all its benefits counteracted.

(*b*) In *impaired convalescence* great benefit will often attend a sea voyage, provided the experiment be not made until all acute symptoms have disappeared. Sea life seems to afford in a typical form that combination of rest, change, and tonic influence which such cases demand.

(*c*) *Scrofulous cases*, especially if the patient be young, form one of the classes most decidedly benefited by a sea voyage.

(*d*) As might be expected, *a priori*, a sea voyage is a certain means of relief from *hay asthma*. Whether it renders subsequent attacks less probable is doubtful.

(*e*) *Laryngeal affections* are usually much benefited by the moist, equable air of the sea. The warm latitude suits such cases best, and the open ocean is better than such an inland sea as the Mediterranean.

(*f*) The case of *consumption* requires fuller treatment than the foregoing. That a sea voyage is often signally beneficial to consumption has long been known, and is quite indisputable; but the greatest difference of opinion exists regarding the indications for its adoption, and the medical press periodically teems with severe, and not wholly undeserved, strictures upon those practitioners (if such still exist) who order their consumptive patients indiscriminately to sea, without regard to the type or stage of the disease, the idiosyncrasy of the patient, or the hardships which sometimes await a feeble invalid on shipboard.

Let us first look at the evidence which is forthcoming upon the general question of the utility of a sea voyage in consumption. If a tithe of the evidence which must exist on this subject could be made available we should be excellently well informed in regard to it; but, unfortunately, the published statistics are for the most part meagre. Drs. C. J. B. and C. T. Williams made extensive trials of the sea voyage among patients, 72 per cent of whom were in the first stage, 11 per cent. in the second, and 16¾ per cent. in the third. The majority of the patients went to and fro between either the Cape, Australia, or New Zealand and the home country, and in most cases the voyages were repeated several times. The results were striking: 89 per cent. of the patients improved, 5½ per cent. remained stationary, and 5½ per cent. became worse. "This," says Dr. C. T. Williams, "is the most favorable of all our climatic experiments." Dr. Austin Flint made trial of the sea voyage in 20 cases of consumption. Of these, 3 ended in complete recovery; in 2 others there was arrest of the disease; 10 others are recorded as "much improved," "benefited," or "notably benefited;" in 3 the result was doubtful or not stated, and only 2 became worse. Only 1 is recorded as suffering seriously from seasickness; and this proportion (5 per cent.) gives us a fair gauge of how far this difficulty is to be apprehended. Dr. Flint states: "We are certainly authorized to conclude that *in a large majority of cases* this measure—viz., a sea voyage—has a favorable influence on phthisis." Dr. Hermann Weber made trial of the

sea voyage in 31 cases of consumption in the first or second stage. Of these, 21 were "benefited considerably," 6 remained stationary, and 5 became worse. Dr. Walshe states that "in not a few instances I have known the Australian trip followed by practical recovery, where excavations, active disintegration, and more or less copious hæmoptysis proved the local advancement of the disease." Dr. Douglas Powell gives it as his opinion that "the voyage is unquestionably a most successful means of climatic treatment in suitable cases." Dr. Wilson (*The Ocean as a Health Resort*) saw 38 cases of consumption in which the sea voyage was tried. Of these, 28 improved, 4 remained stationary, 3 became worse, and 1 died. The cases were *not* specially selected. The writer has made an extensive trial of the sea voyage, and his experience is that benefit is the rule in early cases, the exceptions being very few in number; while of advanced cases some hold their own and are fairly comfortable on shipboard, while others retrograde.

On the other hand, the sea voyage has been sharply assailed. The most serious attack came from a Frenchman, Jules Rochard, who collected a large body of evidence from the records of the French navy to prove that consumption was both commoner and more rapid in its course among sailors than on shore. His conclusions are rendered valueless by the facts that the vessels, on whose records he relies, were stationed at unhealthy places, mainly in the torrid zone; that the hygiene of the French navy was formerly very defective; and that the privations, hard work, and nightly exposure of sailors, which predispose them to consumption, do not apply to a passenger in a well-founded ship of to-day. Dr. Burney Yeo has lately given his opinion that, if all cases of doubtful or mistaken diagnosis be excluded, the instances of benefit accruing to the consumptive from a sea voyage would be very few in number. It will require, however, a large body of definite and unfavorable statistics to overcome the weight of the favorable evidence adduced above, and probably those whose personal and practical knowledge of the sea is greatest will hold most strongly that no such evidence will ever be forthcoming.

Assuming, then, as proved that the sea voyage is a measure of great utility in consumption, it remains to consider for what cases it is suitable, and whether any special symptoms are available to guide our choice. After reviewing a considerable personal experience, and reading most of what has been written on the subject, the present writer is impressed with the great difficulty of defining rigidly the cases suitable for a sea voyage. That early and uncomplicated cases of consumption do incomparably better at sea than those more advanced is unquestionable; but this rule applies equally to other forms of climatic treatment. That hemorrhagic cases do badly at sea seems to be accepted as an axiom by many authorities, but on what evidence the present writer is at a loss to

conceive. Among a large number of cases he has only known two in which serious hemorrhage took place at sea, and in neither were the after-effects serious. It used to be said that hemorrhage was a bar to the high altitudes; it is still said to be a bar to the sea voyage, and one statement is just as fallacious as the other. The fact seems to be that no symptom in consumption is more capricious or of less prognostic value than that of hemorrhage, upon which so much attention is often so unprofitably concentrated. Nor, again, can the amount of fever present afford us a positive rule for or against the sea voyage. No doubt cases with much pyrexia are very unfavorable, and should not be lightly committed to the uncertainties of a distant journey and long separation from home; but to adopt Dr. Faber's rule that "no case of consumption should be sent to the Antipodes unless the evening temperature is normal," would be to limit unduly the area of usefulness of the sea voyage. It would be difficult to sum up better the cases suitable for the sea voyage than is done in the following sentence in Dr. Douglas Powell's work on *Diseases of the Lungs:*

"Cases of threatened phthisis, especially of the acquired kind, in those with overworked nervous systems; quiescent disease, especially of the catarrhal type, with defective sanguinification; and cases of lymphatic and scrofulous type do well on a sea voyage."

This sentence is entirely borne out by the present writer's experience; but he is unable to endorse the sentence that follows—viz.:

"Hemorrhagic cases, those of more purely tubercular type, and those complicated with dyspepsia or diarrhœa, on the other hand, are not adapted for sea voyages."

On the question of hemorrhage an opinion has already been expressed. That dyspepsia or diarrhœa is a contra-indication against the sea voyage cannot be accepted absolutely. There are few better tonics to the digestive system than the fresh breeze of the sea, and diarrhœa, apart from flagrant errors in diet, is exceptional on shipboard, a tendency to constipation being the rule. It may, however, be admitted that where the digestive system is much broken down, and where a rigid dietary is indispensable, the conditions of sea life would be unfavorable. The present writer is also inclined to suspect that patients with much hepatic derangement do badly at sea. Cases far advanced in phthisis are wholly unsuitable for the sea voyage.

To recapitulate, the sea voyage may be recommended with considerable confidence in the following cases of consumption:

(1) Incipient cases, especially in young people and in the male sex.

(2) Cases complicated with nervous breakdown.

(3) Cases in which prolonged sedentary employment in bad air seems to have been the exciting cause of the disease.

(4) Cases with a moderate amount of anæmia.

(5) "Lymphatic" and "scrofulous" cases.

(6) Cases that have arisen from delayed convalescence after pneumonia, pleurisy, or typhoid fever.

A question arises whether cases of laryngeal phthisis should be sent to sea, and on the whole the answer must be in the negative. In such cases the prognosis is so bad that a distant journey is under any circumstances questionable. Again, while such patients would in all probability benefit by the warm, moist air of the tropical and sub-tropical seas, they would be injured by the cold weather which is encountered south of the Cape of Good Hope. On the whole, laryngeal cases had better be sent to such warm, moist resorts as Madeira, or Nassau in the Bahamas. The prospect for such cases is, at best, far from hopeful.

The sea voyage has lately been the object of severe attack from two quarters and on two different grounds. One was from Dr. H. Coupland Taylor, who objects to the sea voyage that the rough and cold weather usually encountered between the Cape of Good Hope and Australia, and the discomforts consequent thereon, are apt entirely to undo the benefits which the patient may probably have derived from the earlier part of the voyage. That this may happen cannot be denied; but such a course of events is exceptional, and is mainly confined to ships that from necessity or choice go far south and meet with unusually bad weather. General experience is far more in accord with Dr. Wilson's statement that it is precisely at this stage of the voyage that all its good effects become most apparent.

A graver attack upon the sea voyage was launched some time ago in the pages of the *Australasian Medical Gazette* (Sydney) by G. R. MacMullen, LL.D., in an article entitled "Consumptive Travellers." Accepting the conclusions of Koch, the writer points out the close association which must exist in the small cabins at sea between the healthy and the consumptive, and the danger of contracting the disease thus incurred by the former. He recommends that

"All intending passengers should, on booking, produce to the shipping agents a medical certificate stating that the intending passenger is in good health, or, if not, the nature of his or her ailment. Secondly, the medical officer in charge of the ship should have power to remove a passenger into the ship's hospital, which, in view of such contingencies, should be properly fitted up for the reception of patients."

No objection can be raised to such reasonable suggestions; but it cannot be admitted that the danger of acquiring consumption is greater at sea than it is in thousands of homes ashore, where the danger is still but lightly regarded. Except in very bad weather the ventilation in good ships is fairly efficient, the vessel's motion creating numerous draughts; nor can there be on shipboard such an accumulation of dried sputum as

prevails in many households, since the washing out and repainting of the cabins are frequently performed. That consumption is communicative can hardly be any longer disputed, but the cases of proved communication are still scanty and almost confined to such instances of constant association as that between husband and wife. On the whole, while Dr. MacMullen's suggestions are worthy of adoption on general principles of hygiene, it cannot be said that the predominance of the bacillary and contagionist view of consumption seriously affects the utility or the area of usefulness of the sea voyage in pulmonary disease.

Those who wish to pursue the subject of the therapeutic uses of the sea voyage more fully than the pages of a journal admit, may consult the following

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TENOTOMY FOR TALIPES.

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EVERY intelligent reader is familiar with the introduction, perfection, and enthusiastic reception of tenotomy by the profession, of the excess to which it was carried a half century ago, of the reaction, and of its present important position as an accepted surgical procedure; but when and in just what cases to employ it remains an uncertain factor in the minds of many surgeons.

After a careful study of a number of cases treated by stretching and tenotomy the writer has come to the conclusion that there is no arbitrary rule to be observed; that neither should all cases be treated by stretching nor all by tenotomy, but that there are cases in which one mode of treatment will accomplish more than the other, and others in which a combination will be most efficient in overcoming the deformity.

The arguments which have been most effectively used against tenotomy and in favor of stretching are that a cut tendon is (1) not as free and (2) not as strong as one that has been stretched. The first argument

applies only to those cases in which the after-treatment has not been effectively carried out, in which the tendon, cut at some distance perhaps from its insertion, has not become free; in other words, an argument applied against a treatment which has not been completed, as we shall see in speaking of the treatment of cases subsequent to tenotomy.

Adams[1] in his dissected cases showed that the tendon and sheath at the point of section had almost entirely returned to its normal condition, and could scarcely be detected on the closest scrutiny; and Sir James Paget[2] says in referring to the specimens of tendo Achillis, posterior and anterior tibial tendons deposited by Tamplin in the Museum of the Royal College of Surgeons, which had been divided four months before death, that "no trace of division of any of the tendons could be detected even with microscopic aid."

The second argument, that the tendon is weaker, applies only to those cases treated on the old plan of late restoration of the deformity, and does not apply to cases treated by the modern methods of immediate over-correction and fixation, for, as clearly demonstrated by the experiments of Sir James Paget,[3] the new tendon is quite as strong if not stronger than the old.

It may be interesting here to review the exact pathological process which occurs when a tendon is divided. Von Ammon,[4] Adams,[5] Hunter,[6] Guerin,[7] Pirogoff,[8] Broadhurst,[9] Paget, and others have all carefully studied the steps of this process, and the following is a *résumé* of their efforts.

Immediately following a well-performed subcutaneous operation a very little blood is effused into the space from which the upper part of the tendon has retracted. If much blood be effused it retards or defeats the formation of the proper exudate, this latter being not an organization of the blood-clot but a specially formed reparative substance. The first result of this division is the effusion of a fluid or semi-fluid inflammatory lymph exudate. The adjacent bloodvessels enlarge and the tissues about the wound become infiltrated, yellow and succulent. This exudate takes no part in the reparative process, and usually ceases in twenty-four hours. Somewhat later, about forty-eight hours in rabbits, the proper reparative material makes its appearance (the inflammatory exudate ceases or degenerates) and fills the entire space between the divided

[1] Club-foot, etc., 1873, p. 36.
[2] Lectures on Surgical Pathology, 1863, p. 201.
[3] Loc. cit., p. 199.
[4] De Physiol. Tenot., etc., Dresden, 1837.
[5] Loc. cit., 1873, p. 16.
[6] The Works of Hunter, Lond., 1837, p. 34.
[7] Essais sur la Methode sous-cutanée, Paris, 1841.
[8] Ueber die Durchschneidung der Achillossehne, etc., 1840.
[9] On the Repair of Tendons, etc., Proc. Roy. Soc., No. 37, 1860.

extremities of the tendon and ensheaths them both for a short distance. This gradually becomes firmer, stronger, and grayer, and about the fifth day forms a distinct bond of union between the ends of the tendon. The differentiation gradually advances, at first rapidly, later more slowly, in time becoming identical, even microscopically, with the original tendon.

It is very interesting here to observe that this exudate is always sufficient to fill up the space between the severed ends, which may in some cases be very great, as in a case recently related to me by Prof. Willard, in which the ends were separated three inches and firm union occurred. The most interesting feature of the process, however, and the one bearing directly on the subject, is that pointed out by some recent investigations performed under the supervision of Victor Horsley, which demonstrated conclusively that if the ends of a tendon be separated a very short distance but a small amount of exudate fills the space; if they be separated a great distance the entire space is filled in, and if they be separated at first but a short distance, or the ends remain in contact and are subsequently separated, the resulting tendon will be a weakened spindle-shaped tendon, from a stretching out of the plastic exudate. It is, then, in cases which have been treated by this old method of not correcting the deformity before three or more days have elapsed, and in which a weakened tendon results, that the second argument can be effectually used against. I have myself seen a case in a young woman so treated in whom a sudden step upon the street caused such a tendon to break. It is with deep regret that we still find recommended this old method of after-extension in such otherwise excellent works as Schreiber's.[1]

In congenital cases, if seen early, as in a recent case in which I was consulted on the seventh day after birth, stretching or some form of retentive apparatus with manipulations should be employed. For this purpose "mole-skin" adhesive plaster properly cut, metal splints and bandages, or plaster-of-Paris dressings after the method of Hienkes,[2] may be employed. Modifications of Scarpa's shoe, especially that ingenious mechanical device of Dr. Shaffer, of New York, have in my hands yielded the best results. These I have employed faithfully and have always been enthusiastic in their favor. The one great objection is the time required to accomplish a cure. This loss of time to my mind would be no objection, if we obtain a stronger and freer tendon, but, as I have endeavored to point out, there is no difference between the tendons if tenotomy is properly performed. There is, however, one objection, and that is the great care and attention required on the part of the parent or attendant. I have a number of cases of severe congenital equino-varus completely cured by means of these shoes, but they have been two or

[1] Allgemeine und specielle orthop. Chir., Wien, 1888, p. 52.
[2] Beilag zum Centralbl. für Chir., No. 24, 1888.

three years under constant observation. On the other hand, I can show similar cases of equal severity in which the deformities have been corrected in the same number of months.

Tenotomy should not be performed until the child is at least three months old, and in all cases the surgeon must be thoroughly familiar with both forms of treatment and should decide which mode of treatment is best suited to the individual cases, and not empirically resort to one method exclusively. In performing tenotomy much of the success depends on the technique. If the pointed tenotomes be employed, as, for example, the slightly sickle shaped knife of Dieffenbach, no other instrument is needed; but if blunt, rounded tenotomes are used, another sharp-pointed bistoury must be employed for the puncture of the skin, and this is always a disadvantage, but one that cannot be overcome in certain localities. Anæsthesia is not absolutely essential, owing to the short time required for the operation, but is usually employed to overcome movements on the part of the patient which might interfere with the operation.

The skin having been previously rendered aseptic by cleansing with 1 : 1000 bichloride of mercury, the parts are so held as to render the shortened tendons prominent. The skin over the tendon is then punctured about its middle in such a manner that this incision and the one in the deeper parts shall not correspond when the parts are relaxed. The tenotome is carried flatwise beneath and close to the under surface of the tendon, the cutting edge is turned against it and the division accomplished by a slight rocking motion. The section is usually evidenced by an audible crackling and the extension of the contracted part. The assistant should at once relax the part. The tenotome is then turned flat and withdrawn, the operator compressing the wound to prevent any ingress of air. The puncture is then dressed with a small wet bichloride compress, and by a superficial dressing of gauze and cotton, and a prepared roller. The parts should then be placed in a slightly over-corrected position and retained in position by a metal retention-shoe which allows inspection, or a plaster dressing. The wound need not be inspected for ten days unless pain or elevation of temperature calls attention to the part.

Owing to the prominence of the contracted tendons there is not the same difficulty there would be in the normal state, and not the same danger of wounding adjacent structures, hence the complications following tenotomy are therefore few and usually slight. There may be:

1. Too great wound in the tissues or puncture of the opposite side from movements of the patient. With an antiseptic dressing such accidents are of no importance.

2. Profuse hemorrhage from wounding a large artery, as the anterior

or posterior tibial or plantar arch, is sometimes alarming, but calls for an antiseptic compress, a ligature being seldom necessary.

Such an accident can usually be avoided by inserting the tenotome in such a manner as to avoid the artery, and then cutting away from it. For this reason, in section of the tendo Achillis, if a sharp-pointed tenotome be employed the puncture should be made on the inner side, to avoid the risk of cutting the posterior tibial artery with its point.

3. A traumatic aneurism may be treated with a firm compress.

4. The section of a nerve, which although a disagreeable complication calls for no especial treatment, as the ends will probably unite in a short time.

5. Incomplete section of a tendon, which should be guarded against by observing that the tendon is completely severed before the tenotome is withdrawn. Otherwise the operator must forcibly rupture the undivided fibres or reinsert the knife.

6. Suppuration, which very rarely occurs, but should be met by free drainage and antiseptic dressings.

The after-treatment requires as much if not more attention to detail than the operation itself, and on this depends much of the success. Speaking of this after-treatment, Reeves[1] aptly remarks:

> "I wish it thoroughly to be understood, that though correction by tenotomy and splinting are absolutely essential in the majority of cases, it is to the subsequent proper adjustment of splints, frictions, manipulations, massage, etc., of the foot and leg that very much of the success of these cases depends, and I am quite sure that if the tediousness of these cases, which is perhaps augmented by the fact that very few cases come annually under the care of surgeons at general hospitals, were less considered by them, special institutions would see less of *relapsed* cases."

At the expiration of ten days the foot should be inspected, and if in good condition it should be placed in a well-constructed mechanical walking-shoe. At least once a day and preferably twice a day the foot and leg should be rubbed with linimentum saponis, or bathing whiskey, and manipulated, particularly over the muscles and tendons which were formerly contracted. This is very important and tends to free and strengthen the tendons. The skin over bony joints subjected to pressure should be hardened by the application of a solution of alum in alcohol. At night for some months the foot should be placed in a retention night-shoe, by which any tendency to relapse may be corrected.

In conclusion I may summarize as follows:

1. Stretching should always be first employed in cases which are seen early.

2. Mild cases should always be treated by stretching.

[1] Bodily Deformities, etc., Phila., 1885, p. 165.

3. Patients who object to the knife can be effectually cured by stretching, but it requires a longer time.

4. A tenotomized tendon is as strong as one that has been stretched.

5. In severe cases it is better to save time by tenotomy.

6. After-treatment to prevent relapse is quite as important as the operation itself.

COMPOUND COMMINUTED FRACTURE OF THE PATELLA TREATED BY WIRING.

By Middleton Michel, M.D.,
of Charleston, S. C.

The unexpected termination of the following otherwise successful operation attests the disappointment which too frequently terminates the surgeon's confident expectation, through some intercurrent disease to all appearance unconnected with his operative procedure.

The importance attached to every case of compound comminuted fracture of the patella, associated with hæmarthroidal effusion and extravasation to an inordinate extent, and to the method of treatment by drilling and suturing the fragments, makes it imperative to publish the ultimate result, whatever this may be, of every operation of the kind.

There was a time when the fatality of such a complicated fracture of this bone led to the amputation of the limb without hesitation, and in military surgery our recent experience taught us, both in field and hospital service, that under any mode of treatment then in practice, however inconspicuous the wound appeared to be in this particular region from gunshot injuries, death sooner or later was certain to result, unless resort was had at once to amputation or resection. But now, under the observance of antiseptic technique, in the opinion of many we may confidently and aggressively invade a territory forbidden to our predecessors.

We here restrict our remarks to such injuries as are likely to result from direct violence, in which the patella, as the rule, is almost invariably fractured into pieces held together by its fibro-periosteal investment; the joint filled with grumous blood and serum; the capsule lacerated and tumefaction great.

Such a condition of the knee is very different from fracture of the patella from muscular contraction, or from an old ununited fracture with serous effusion. In these last-mentioned conditions, we understand perfectly and are ready to endorse the authoritative utterances of an earnest protest against the very serious operation of arthrotomy, with the accompanying drilling and metallic suturing of the fractured bone, by

those who advocate aspirating the joint and using Otis's Malgaigne's hooks of easy application, or other simpler methods. But when an articulation of the anatomical complicateness and size of the knee has already been destructively assailed, we must lose sight of all other circumstances but the life of the patient, boldly encroach upon the injured cavity, and by protracted, by even tedious antiseptic ablutions complete the toilet of its large and sensitive serous surface, taking no heed of the possible anchylosis, necrotic changes in the patella, or of simply fibrous or ligamentous union that may be all that is in store for the future; for perhaps a brighter prospect awaits us in a yet more useful and mobile joint, if we recall the successes of many who have obtained speedy healing by first intention with bony union of the fragments.

In the presence of such an accident as is here recorded, with a joint in the condition in which I found this patient's, there was reason for congratulation that conservative surgery offered provident methods of shielding an imperilled articulation and of wiring the broken bone, and that this promise of relief had sometimes been realized.

The inherent difficulty of the operation is in overcoming the antagonistic force of the quadriceps femoris, and in securing perfect apposition of the bony surfaces without the interposition of shreds of the fibrous tissue surrounding parts of the patella; but from the nature of this periosteal envelope, should a small portion obstinately intercalate itself between the contiguous fragments, it is by no means certain that these circumstances would impede osseous union. The entire displacement of any loose detachment of bone would require, of course, that such be removed.

The successful maintenance of the required adjustment of the patellar fragments so as to establish perfect apposition without tilting of the pieces can only be accomplished by metallic wiring of the bones, and this operation must be cautiously performed, disturbing as little as possible the aponeurotic fibres whose integrity may prove essential to safe and firm union. The proper drilling and wiring of the bones are the important parts of the operation, and these are best accomplished, perhaps, by Tiemann's drill-stock and drills, and should be conducted through the cancellated part of the fragments so as to be entirely extra-articular. A strong patellar wire is required to retain the bones firmly together, the ends of which, well twisted and cut short, should be impacted up to fixity of tenure within the fibrous covering of the patella, in which they readily become ensheathed and encapsulated, and can do no harm, being permanently retained.

In what possible condition of greater safety can we place a joint in this critically dangerous, if not absolutely hopeless state, than when we shall have pared the edges of its lacerated and contused tissues; thor-

oughly cleansed antiseptically the recesses of its hidden structures; approximated, blended together and closed the solid and softer portions of its fatal wound, having, so to speak, literally reconstructed anatomically its constituent parts? Add to this the promised assurances of an aseptic condition of the parts incompatible with the formation of pus during the processes of repair, and we shall have divested the operation in this region of the body of any greater danger than that which might attend the performance of the simplest surgical procedure.

As has already been intimated, the progress of this case was neither interrupted nor suspended in its advancement toward a perfect cure, but was grafted unfortunately upon some vice of the constitution, connected, as his physican explained, with a chronic disease of the liver from which he had long suffered and which culminated again in its latent influences upon him at this juncture; yet notwithstanding this unfortunate occurrence the wound progressed favorably and had almost entirely healed in the short period of a week without the slightest trace of suppuration.

It was on the seventh of September, at a late hour in the afternoon, that Mr. B. H. received a violent injury of the right knee from the kick of a horse. His physician detected a fracture of the patella, complicated with a lacerated wound of the joint, through which issued synovial fluid mixed with blood. I was not called into consultation until the next day, when I found the knee very much swollen; a wide diastasis of the fragments of a broken patella, and gentle pressure about the parts caused a flow of grumous blood and glairy fluid from the open wound. The patient was about fifty-five years old, of a highly bilious and sanguine temperament, a generous liver, using, as I was told, liquor freely, and that he had suffered but recently from some derangement of the liver. His complexion was very sallow, there was no fever, he suffered but little pain about the knee when at rest, and seemed less concerned about himself than he did about a relative ill in an adjoining room, who died a few days later, which circumstance is here mentioned, as the depressive and inconsolable effect of this death produced a very sudden and deleterious influence upon the result of his own case.

Made acquainted with the nature of the injury, of its gravity, and of the operation proposed for its relief, he begged me to proceed without further delay.

The knee, entire joint and even adjoining parts were washed with soap and water, and again cleansed with carbolized water, after which the immediate operative region was shaved and wiped off with spirits of turpentine, and cleansed once more with a mercuric chloride solution of 1 : 500. The instruments and the hands of my assistants and my own were rendered aseptic; indeed disinfection was kept up during the continuance of the operation, sublimated compresses protecting all parts, while sublimated sutures alone were used.

The patient was now placed under the influence of a mixture of chloroform and ether, a crucial incision opened freely the joint, which disclosed at once a loose piece of patella nearly detached, which was removed;

shreds of prepatellar tissue entangled in the edges of the fractured bone were liberated and cleansed and only partly excised, as we believed these aponeurotic bands essential to firmer union. The fracture was transverse, and the lower fragment was broken into two pieces. The approximation of the fractures could be accomplished with little or no resistance by bringing the bones together, which being ascertained, we proceeded to drill, first the lower fragments and then the upper, which were traversed through the thickness of the pieces, carefully avoiding the articular facets so that the wiring should be entirely extra-articular. Complete hæmostasis was insured during the operation, particularly upon the opposing surfaces of the bones before closing and twisting the wires, which were then cut short and impacted firmly beneath the aponeurotic investment of the now reconstructed sesamoid bone. After a careful ablution of all parts the crucial wound was united by carbolized catgut, with the exception of a dependent portion of the transverse incision which was left open, through which the joint might be irrigated at each subsequent dressing, as no drainage-tube was used, intentionally. The surface was iodoformized, aseptic gauze and absorbent cotton enveloped the knee, while the entire limb was adjusted to a posterior splint protected by sterilized wadding and secured by bandages that had been prepared in a bichloride solution of 1 : 500.

For forty-eight hours after this ordeal he maintained a normal temperature and pulse, without pain, sleeping well without anodynes, taking a pill of two grains of quinine every three hours; the dressings were but little defaced; his appetite good, he had eaten a rice-bird, with soup, milk, etc. The third day his temperature rose to 101°, he had no pain, the bandage just over the knee presented a small stain of blood, his appetite not so good. We did not intend to disturb the parts until the fifth day, but concluded to do so at once. There was scarcely any blood upon the cotton; the wound, still covered with the remains of the iodoform, had evidently united in part by first intention; slight pressure forced but little bloody serum through the open portion of the wound, through which the joint was well irrigated with bichloride solution 1 : 2000, until the recurrent flow was as clear as the influx. The knee appeared as natural as its congener, there was no hæmarthrotic complication whatever, the pills of quinine with acetanilid combined, in the proportion of four grains to each pill, were now administered until he had taken about twenty-five grains of each.

The fourth day the pulse was 90, temperature 101.5°; he was restless, no headache, no vomiting, bowels had to be moved with hydrarg. sub. mur. gr. j, resin podophyl. gr. ¼, sodium bicarbonate grs. vj, which pill acted well; he took food with but little appetite; the bandage was not stained. On this day, unfortunately, his sister died, and the funeral occurring the next day agitated him extraordinarily, there was undisguised emotional and physical excitement, which I cannot but think hastened an event about to occur from trouble of some kind about a diseased and indurated liver.

At first there seemed to be no diathetical condition that could have attracted attention in one so apparently healthy, though I became convinced of it afterward from his physician's history of the case.

The morning of the fifth day we were told he had not slept during the night; his pulse was not accelerated, but the temperature was 102°;

the pills were continued; he was jaundiced, had lost his appetite, complained of pain over the liver. That night the pulse fell to 88, and temperature 100°, tongue dry, but he seemed comatose; he could be aroused, and he spoke, but he appeared inconsolably depressed. We dressed the wound, and were surprised at its being virtually healed; there was no discharge from the granulating orifice, and therefore no further irrigation was deemed requisite. My friend, Dr. Wasden, of the United States Marine Service, tested the perfectly aseptic condition of the parts, and could not perceive the slightest odor on the closest approximation to the wound. The pills were discontinued. The jaundiced condition was still more marked. On the morning of the sixth day the temperature rose to 102°, pulse 90; he was more drowsy, tongue dry, refused food; and he died on the morning of the seventh day.

The rehearsal of these details accentuates two facts which deserve special recognition; the first is, that the prophylactic methods of aseptic surgery hastened the reparative process in this wound without the production of one drop of pus, and without the ordinary reactionary phenomena attendant upon so severe an operation—whether we ascribe this result to the exclusion of pathogenic organisms on the one hand, or to the observance, simply, of thorough cleanliness on the other; and secondly, that the fatal termination of this case could scarcely have depended upon septicæmia, as no putrefactive detritus nor ferment of any kind was permitted to reach the blood, no chills, no sweats, vomitings, nor steadily increasing fever were noted. In the spacious apartments of wealth and comfort in which our patient resided there was no miasma to introduce the desiccated germs, which, floating through the atmosphere of an eleemosynary institution, might readily have accounted for some spontaneous development of blood poison.

Without discussing the question whether traumatic fever can possibly originate independently of the imbibition or of the absorption of organic detritus from the wound, as a mild form of septicæmia, or whether it be the result of the liberation and reabsorption of a *free fibrin ferment*, occurring as it must then do spontaneously and coetaneously with the traumatism itself, we can safely conclude that if no steadily increasing reactionary fever occur for three or more days after serious injury to the soft parts, we are not probably in the presence of traumatic fever *per se*, since the highest authorities affirm from repeated observations that this fever frequently commences within the first twenty-four hours, or beginning of the second day, and in no single instance does it supervene after the fifth day. If, then, we exclude those ultra-microscopic particles as the supposed *materies peccans* of true septicæmia, we may yet more confidently affirm that the absorption of ptomaines likely to induce septic intoxication by producing what has been termed sapræmia, was effectually interdicted also by the cautious methods adopted and enforced in this case.

We should have mentioned that there was no disturbance of the bowels, which certainly showed that there was nothing that sought elimination by the intestinal canal.

We regret that an autopsy was not accorded us, as it doubtless would have disclosed the true nature of this hepatic disease.

RECURRENT HERPES ZOSTER.

By M. B. Hartzell, M.D.,
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Our knowledge of recurrent zoster is of comparatively recent date, and, as yet, the number of cases in which two or more attacks have been reported is quite small. O. Wyss,[1] in 1871, communicated the particulars of a case in which he believed himself justified in assuming that the attack then under observation was the second one, on account of the presence of cicatrices, and the statement of the patient that he had had an exactly similar eruption thirty years before. It was, however, so late as 1874 that the first case of recurrent zoster with a complete history was published by Kaposi.

Because of its rarity and other features of an unusual character, the following case is of considerable interest, and has been thought worth reporting:

M. B., æt. forty-five, a railway-car inspector, evidently in poor health, first came under observation in November, 1884, suffering from severe neuralgic pains situated in the upper and inner part of the right thigh. These pains had already lasted some hours, and continued with almost unabated severity thirty-six to forty-eight hours after my first visit, at the end of which time an eruption consisting of several small groups of pin-head- to split-pea-sized vesicles filled with clear serum appeared upon the inner surface of the upper part of the right thigh. The pains now began to diminish in severity, and finally ceased entirely after another day or two. The vesicles, having been ruptured by the patient, who imagined he obtained relief by letting out their contents, rapidly dried into thin crusts which soon fell off, and in a short time all trace of the eruption had vanished.

Three weeks after the attack just described the patient was again seized with severe pain; this time, however, over the sacrum and down the back of the thigh, along the course of the great sciatic nerve. As before, after a duration of a day or two, the pain was followed by an herpetic eruption, in this instance over the sacrum, which ran the same course as the preceding one.

[1] Archiv. f. Heilkunde, 1871.

These attacks continued to occur at intervals of three or four weeks for a year or more, the pain and eruption being sometimes situated over the sacrum—the most frequent site—sometimes over the inner surface of the thighs, and once, at least, on the right side of the scrotum. While in the great majority of attacks the right thigh was the one affected, yet the left one was occasionally the seat of the neuralgia and eruption; and upon several occasions these were bilateral, both thighs having groups of vesicles upon them. The eruption, when seated upon the sacrum, in those attacks which came directly under my observation, and in all, according to the patient's statement, always occurred upon both sides of the middle line. Under the internal administration of iron, arsenic, and cod-liver oil the intervals between the attacks grew longer; the neuralgia less severe, until an entire year elapsed without a recurrence. Treatment was then pursued in an irregular manner, and, finally, suspended entirely.

Within a few months the disease returned with all its former severity, and, at the time of writing, the patient is just recovering from an attack, the remains of a group of vesicles being yet visible over the sacrum.

While, as a rule, the eruption disappeared without leaving any trace of its existence, yet occasionally scarring resulted; and a recent examination of the affected parts discloses a considerable number of small superficial cicatrices, most abundant over the sacrum.

It is worthy of remark that the severe neuralgic pains are always preceded for a day or two by intense burning sensations, occurring in small circumscribed areas situated most commonly over the anterior surface of the thigh about its middle, but also occasionally on other parts of the limb.

From a careful inquiry into the history of the malady, it was learned that some months before the first seizure—the exact period could not be definitely fixed—the patient had sustained a compound fracture of the right femur, and that the pains during the first year or two after their beginning, although differing in no respect as to severity and location from the subsequent ones, were unaccompanied by any change in the skin. Since its first appearance, however, the herpes has never failed to accompany the neuralgia.

A diligent search of the literature of the subject has enabled me to collect eleven cases of zoster in which from two to seventeen attacks occurred. An analysis of these eleven cases reveals some interesting features as to the etiology, the character of the eruptive lesions, and the course of the disease. In three instances the zoster occupied the face; in five, it occurred over some of the branches of the brachial plexus; in three, the lumbar plexus furnished the nerve supply to the part affected, while in my own case the sciatic and its branches were the seat of the neuralgia.

It is somewhat remarkable that in four out of twelve cases—this includes the one reported in this paper—the eruption was bilateral one or

more times. In two of these four cases the bilateral character of the eruption was present in each recurrence; in the remainder, it occurred only exceptionally.

In the three cases reported by Kaposi[1] under the title of "gangrenous recurrent zoster," the eruption departed markedly from the ordinary type of herpes, both as to the character of the individual lesions and their arrangement. At the seat of the eruption the skin appeared as if cauterized by sulphuric acid or caustic potash; small eschars formed, which, after falling off, were followed in time by keloid-like scars. The arrangement of the lesions was peculiar, too, in that they were grouped in a circinate manner, recalling herpes circinatus, and new rings of vesicles were formed at short intervals around the older groups. Nor did the entire eruption appear at once over the course of the nerve affected, but, contrary to the usual course, first appeared over its peripheral branches and extended toward the centre by successive out-breaks. In the first of these three cases there were nine attacks, separated by intervals varying from three weeks to thirteen months.

Kopp[2] has described a case of zoster of the left side of the face, in which no less than seventeen attacks had occurred in a period of five years, and which produced so marked scarring as to recall that resulting from an attack of variola. In a case reported by Tilbury Fox,[3] the eruption, according to the patient's statement, occurred every summer, and was invariably accompanied by a herpes upon the penis. Quite recently von Düring[4] has given the details of a case of recurrent zoster femoralis, in which erysipelas, and four attacks of what the author calls pseudo-erysipelas—a diffuse reddening of the skin unaccompanied by constitutional disturbance—preceded the herpetic eruption. The zoster occurred at intervals of about six weeks, and occasionally a preputial herpes seemed to take the place of the femoral one, since the interval between the recurrences upon the thigh was much longer when there had been an eruption upon the foreskin. In connection with the last two cases mentioned, reference should be made to Eliot's[5] case of bilateral recurrent zoster situated upon the side of the neck, in which, likewise, herpes occurred upon the penis.

In a large proportion of these eleven cases—36.3 per cent.—an injury of some kind had preceded the appearance of the disease, and was regarded as its probable exciting cause, not always, however, as it seems to me, with sufficient reason. In a case of ophthalmic zoster reported by

[1] Wien. med. Wochenschr., 1874-75-77-79.
[2] Trophoneuros. der Haut, p. 101.
[3] British Medical Journal, 1870.
[4] Monatsheft f. prak. Dermatol, 1888.
[5] Journal Cutaneous and Genito-urinary Diseases, September, 1888.

Nieden,[1] in which there had been five attacks in six years, there had been an injury affecting the transverse processes of several of the cervical vertebræ, which was supposed to have brought about secondarily a diseased condition of the superior ganglion of the cervical sympathetic. In Kopp's case, quoted above, the patient had received a severe blow upon the head a short time previously; but an examination failed to discover any evidence of injury inflicted by the blow. In a case of femoral zoster reported by Fabre,[2] the eruption appeared for the first time upon a part of the thigh recently bruised by a fall, but the second attack occurred beneath the scapula. As this patient shortly afterward suffered from furunculosis, and was found to have glycosuria, it is much more probable that the diabetes was the causative factor, the appearance of the herpes upon the injured thigh being nothing more than a coincidence. An exceedingly interesting case from an etiological point of view has been briefly described by Jewel,[3] in which the appearance of a femoral zoster in an unusually stout woman was invariably preceded by violent pains in the uterus. With the cure of the uterine disease the herpetic affection vanished completely. In von Düring's case, referred to above, a severe septic phlegmon of the upper part of the thigh, which required several incisions, was regarded as the cause of the zoster.

From the foregoing brief analysis it is quite evident that recurrent herpes zoster is in many respects, apart from the feature of recurrence, markedly different from the ordinary type, such as is seen, for example, on the side of the thorax, over the course of the intercostal nerves. The repeated attacks, together with the unusually large proportion of cases in which the eruption is bilateral, point to lesions centrally situated, which have produced more or less profound disturbance of trophic centres.

In concluding, I wish to suggest the probability that many cases of labial and preputial herpes, in which recurrences are frequent, may be, in fact, cases of recurrent zoster limited to very small nerve branches.[4]

[1] Mendel's Centralbl., 1882, p. 379.

[2] Gazette Méd. de Paris, October 20, 1883.

[3] Trans. Amer. Neurolog. Assoc., 1875.

[4] Vide case of recurrent labial herpes, Annales de Dermatol. et de Syphiligraphie, Doyon et Diday, 1884.

REVIEWS.

THE NATIONAL MEDICAL DICTIONARY: INCLUDING ENGLISH, FRENCH, GERMAN, ITALIAN, AND LATIN TECHNICAL TERMS USED IN MEDICINE AND THE COLLATERAL SCIENCES, AND A SERIES OF TABLES OF USEFUL DATA. By JOHN S. BILLINGS, A.M., M.D., LL.D. Edin. and Harv., D.C.L. Oxon., M.N.A.S., etc.; with the collaboration of W. O. ATWATER, M.D., FRANK BAKER, M.D., S. M. BURNETT, M.D., W. T. COUNCILMAN, M.D., JAMES M. FLINT, M.D., J. H. KIDDER, M.D., WILLIAM LEE, M.D., R. LORINI, M.D., WASHINGTON MATTHEWS, M.D., C. S. MINOT, M.D., and H. C. YARROW, M.D. 2 vols., large 8vo., pp. 731, 799. Philadelphia: Lea Brothers & Co., 1890.

WITHOUT disparagement of the other valuable medical dictionaries already in use, this one may be fairly said to be the most desirable for possession and reference by both students and practitioners. Dr. Billings would have been the choice of the profession for such a task, could it have been submitted to suffrage; not only because of his ability and medical scholarship, recognized with the highest honors at home and abroad, but also because the immense experience of the superintendence of the *Index Medicus* has afforded a special preparation for this work. The judiciousness of his selection of collaborators is shown by the general excellence of the definitions given throughout the two volumes.

The extensive tables at the beginning of Vol. I., while not necessary to a medical dictionary, add much to its usefulness, as they contain matter a considerable part of which can hardly be found elsewhere, except as scattered through a number of different publications. They include a Table of Doses, of Antidotes for Poisons, of Inch and Metre Numbers for Spectacle Glasses, of Thermometric Scales, of Average Dimensions of the Fœtus at Different Ages, Average Dimensions and Weights of Parts and Organs of the Human Body, Nutritive Ingredients, etc., of Foods, Dietaries, and Expectation of Life at Different Ages. Not all of these very elaborate tables are merely compilations. Especially important in their original data are those of Professor Atwater on foods, dietaries, etc., as they give the results of many American as well as European observations and experiments.

Dr. Billings, in his Preface, tells us that "errors of commission and of omission in this work are to be charged to the editor-in-chief," and he will be greatly obliged to those who will point out to him the various mistakes they discover. Accepting this generous challenge, although it is not expected that any one—even a reviewer—will *read through* a dictionary, we have looked over it with considerable care. Having expressed our approval and admiration of the work as a whole, it may

be permissible to be almost hypercritical in regard to some particulars, especially as little more than verbal criticism is practicable of a book whose subject is the meaning and use of words.

Cardinal virtues in a dictionary are clearness and sufficient fulness, without redundance. Generally the definitions in this work are clear, but sometimes lucidity is sacrificed to brevity; there is occasionally an extreme parsimony of space. Of this the acme is reached in the following definition: "Cor (F.) corn." A dictionary being meant especially for the least informed, we can imagine a student having to look in his French dictionary to make sure that *cor* is not the equivalent of *blé* or *maïs*, but is medically used for a corn on the foot. Again, *Sims's position* is simply defined "latero-abdominal position." This will not much help a learner. "Knee-elbow position," given in its own place, might have been omitted, as it explains itself. It is said, correctly enough, to be "genu-pectoral position." A few other unnecessary definitions appear, as of Voice, Gumboil (gingival abscess), Hernia-knife, Nostrils, Cough. Omission of these would have left some lines of space available to make more entirely clear the account of some less familiar terms. There has been, on the principle of extreme brevity, too great an avoidance of *repeated* definitions. Thus calomel is simply defined "mercurous chloride." An unlearned reader must then go to the other volume of the dictionary for these terms. Tachometer, in Vol. II., has mentioned as its equivalent *Hæmadromometer;* for this reference must be made to Vol. I. Apozème is said to be "a magistral preparation," etc. In this and a few other instances there is apparent a presumption of ready knowledge which is not apt to be possessed by those who have the most need of a dictionary.

With nearly 85,000 words to be attended to, some may, of course, be easily overlooked. We have missed in this work only ten: Bivalent, dextrose, hydrometer, lanthanium, niobium, picronitric acid, quadrivalent, rubidium, sensori-motor, thallium.

Proportion has been, almost throughout, well preserved in this dictionary; it does not, as some others have done, show a constant ambition to grow into a cyclopædia. It is, it is true, with some surprise, that we find Bright's disease (to which Dunglison gives nearly half a page) having but seven lines; yellow fever the same; and cancer but six lines as an English word, with ten more for French names of its varieties; while under hog-cholera there is half a column, and under swine-plague seventeen lines. For bacillus and micrococcus, to give the former more than four pages and the latter a page and a half, belongs to the present era of pathogenic biology. Some future edition may call for revision, if not abridgment, of these pages.

But the nearest approach to cyclopædic *hypertrophy* in the present work is in the departments of psychophysiology and physiological optics. Thus we have *articles* on Corresponding Points, Depth-feeling, Fundamental-formel, Height-feeling, Horopter, Lines of Regard, Lines of Demarcation, Lines of Direction, Prevalence of Contours, and Psychophysical Methods. Some of these would be accounted short articles in a cyclopædia, but they are all long—several of them clearly too long—for a dictionary, especially as those terms are very unlikely to be met with except in writings in which, being purely technical, they are immediately and fully explained.

Very few of Dr. Billings's definitions have authority against them.

One or two seem to us to be at least of doubtful validity. *Infection* is properly said to be understood to refer to things rather than to persons; implying the presence of a virus or of bacteria. But under *Infectious* we read that "A disease is said to be infectious when it can be communicated to another person." This shuts out the idea, which is very important, of *local* infection. Yellow fever and dengue are both defined, in the work before us, as infectious. In the sense of personal contagiousness, this is contradicted by a large preponderance of evidence.

Lichen is defined as characterized by umbilicated papules. The word umbilicated might certainly be left out with advantage.

Roseola is said, "when distinctly contagious, to be roetheln." Nosologists generally, we believe, will agree that roetheln is entirely a separate disease from anything properly to be called roseola.

Steno's duct is asserted to be an error for Stenson's duct. Against this we have at least the very respectable authority of *Lippincott's Biographical Dictionary*, which credits the discovery to Steno. It is quite possible, of course, for Dr. Billings or his collaborators to have ferreted out the truth of this matter, as such credits are often inaccurate or doubtful.

Talipes valgus is defined as "flat-foot." More commonly it is understood to be the opposite of talipes varus; the knees approaching each other, and the feet being turned outward. Flat-foot is, by some, called talipes equino-valgus.

Contra-stimulant we would define as not causing "depression of vital power," but only of vascular excitement—quite a different thing. Objection may be brought, also, to the definition, in this work, of the zymotic theory; that it is "the theory that specific diseases are caused by ferments or low organisms." Liebig's theory of pathogenic zymosis was distinctly not a "germ-theory." It was chemico-vital. He held that a virus acts on the fluids of the human body in a manner analogous, but not similar, to that of ferments upon other materials; no real fermentation taking place, but a change involving a multiplication of the virus in the system. Whether the character of the virus depended or not upon the presence of a minute living organism, was a question apart with Liebig and those who have held with him, from that of the truth or falsity of the zymotic theory.

With very little exception indeed, the pronunciation and orthography of medical terms in this Dictionary are beyond question. It will be well if, in the matter of pronunciation, it shall promote the correction of a number of common, at least colloquial, errors among physicians. It is true that usage, the best usage, constitutes the ultimate authority in spelling and pronunciation. But who is to determine what is the best usage? We believe that a dictionary, when prepared by competent hands, is rightly an important factor in *making*, or influencing, usage; sometimes in the direction of rational improvement. Thus we should have been glad if Dr. Billings had given for all the alkaloids and other proximate principles the termination *in*, without the final *e*, as he has done with caffein, digitalin, fibrin, glycerin, paraffin, and others. Also, the English spelling, meter, now much in use, might have been recognized as correct; and the diphthong might have given way in such words as diarrhœa, dysmenorrhœa, etc., and in hæmorrhage, hæmorrhoids, etc. Webster, at least, allows diarrhea, and both Worcester and Webster give hemorrhage and hemorrhoids as alone right. Words in

general, not exclusively of medical, use, ought to follow the best authorities, sanctioning general usage. For this reason especially, we regret that the dictionary before us gives the pronunciation *kwe-neen* for quinine. Dunglison and Thomas both agree with prevailing (at least American) usage, in preferring the long sound (as in *mine*) of the second syllable of that word. It is to be wished that Dr. Billings, like Dr. Joseph Thomas in his excellent *Medical Dictionary*, had indicated the sound of g at the beginning of words. He might thus have aided in rectifying the now frequent mispronunciation of gynecology; which ought to have, in its first syllable, the sound of gy as in gymnastics; not, as we often hear it, like the sound of gui in guide.

Other notes of suggestion might be added, but there is not space for them here. We could render no higher compliment to such a work than to give it a minute, if it even seem a hypercritical, examination. It is well worthy of it; as it is also of a place near the elbow of every medical student, and on a low-down shelf in the office of every practitioner.

The typography of these volumes is only too elegant; they have almost the character of an *édition de luxe*. Some impecunious students would rather have had a single volume, with the clear, small type of Dunglison: the possible increase of cumbrousness thus caused being compensated for by a reduction in its price. But it is worth its cost as it is, and is sure to go through many future editions, as a standard, if not the standard, medical dictionary. H. H.

Du Sang et de ses altérations Anatomiques. Par Georges Hayem, Professeur à la Faculté de Médecine de Paris; Membre de l'Académie de Médecine; Médecin de l'Hôpital Saint-Antoine. Avec 126 figures dans le texte, noires et en couleur. 8vo., pp. xxvi, 1035. Paris: G. Masson, 1889.

The Blood and its Anatomical Alterations. By George Hayem, Professor in the Medical Faculty of Paris, etc.

If any proof were needed that hæmatology is a distinct specialty, it is furnished by this superb volume which is the crowning work of one who is everywhere recognized as an authority on the subject of which it treats. A work such as this can be nothing else than the fruit of many diligent years of research, a fact made patent by the list of the author's previous publications on the blood—ninety-two in number—which immediately precedes the first chapter.

It is manifestly impossible in reviewing this book to do more than touch upon certain salient points of general interest and fundamental importance. Before beginning this congenial task, however, we must point out that the title is defective, inasmuch as it does not indicate fully the scope of the book. The disappointment, if one may use such an expression, experienced in turning over the pages of this volume, is most agreeable, for, besides the blood and its anatomical alterations, it treats of chlorosis, chloro-anæmia, progressive pernicious anæmia, post-hemorrhagic anæmia—in short, of all the diseases which have their seat in the blood or find their fullest expression in that fluid.

The work is divided into six parts, of which the first treats of the

histological examination of the blood, the enumeration of its corpuscles, the estimation of its percentage of hæmoglobin, its spectroscopic examination, and the examination of its serum. These important technical matters are treated with great clearness and precision, which is, doubtless, in part, owing to the fact that the author confines his descriptions to the methods employed by himself. It would certainly not have been out of place for him to allude to the ingenious instrument of Fleischl for estimating the amount of hæmoglobin in the blood, and to that of Abbé and Zeiss for counting its corpuscles. These instruments are, doubtless, modifications of others which have preceded them, but outside of France they are rapidly coming into favor, and will probably soon entirely supersede their prototypes.

The second part is purely anatomical and comprises three chapters, of which the first is devoted to the anatomy of human blood, the second to that of vertebrate animals with nucleated red corpuscles, and the third to the quantity of the different elements of the blood of man and various animals. In the blood of man Hayem divides the corpuscles, with reference to their size, into three classes: a large, a medium sized, and a small, of which the diameters vary from 8.5 μ[1] to 6 μ. In 100 corpuscles there are 75 of medium size, 12.5 large, and 12.5 small. In addition, there will always be found, on careful examination, a few dwarf and giant cells; the former being less than 6 μ in diameter, the latter more than 9.5 μ. The various physical properties of the red corpuscles, their structure, and their reaction toward various chemical reagents and coloring matters are thoroughly considered.

Hayem is distinguished among hæmatologists by the important physiological *rôle* which he assigns to certain formed elements of the blood variously known as hæmatoblasts, blood-plates, and blood-plaques. The existence of such bodies, and their participation in the formation of thrombi are admitted by all; but there are few who agree with Hayem in regarding them as the germs of the red corpuscles. His principal reasons for so doing are derived from a study of their structure, which shows them to be composed of two substances: an insoluble stroma of fibrinous character, and a viscous organic matter, distinguished by its tendency to exude from the stroma and adhere to neighboring red corpuscles, hæmatoblasts, or to the object- or cover-glass. He claims also to have observed in human blood, corpuscles intermediate between the hamatoblast and the fully developed red corpuscles. In the blood of cold-blooded animals there are certain ovoid or spindle-shaped, nucleated, colorless cells which Hayem regards as the analogues of the human hæmatoblasts and the germs of the nucleated red corpuscles. These views of so distinguished an authority are entitled to the greatest consideration and call for further study of this important subject. It must be confessed, however, that, up to the present time, the tendency of research has been rather to refute than to confirm them. Thus, for example, opinions differ as to the very existence of the so-called hæmatoblast in normally circulating blood. The latest communication on this subject is by Löwit,[2] of Innsbruck, who, after a fresh series of experiments, is more than ever convinced that the so-called hæmatoblasts are not normal elements of the blood, but products of decomposition of

[1] μ signifies micromillimetre.
[2] Virchow's Archiv, September, 1889.

the white cells, or precipitations from the plasma, and he calls attention to the coincidence that at one time Hayem himself spoke of the *blutplättchen* (identical with his hæmatoblasts) as precipitations—*concrétions sanguines par précipitation.* The technique of Löwit's experiments is very delicate. He examines the blood in a mixture of castor oil and cod-liver oil of a certain temperature and specific gravity, and without a cover-glass, for the mere contact of the latter, or a fall of temperature is sufficient to cause the formation of the bodies in question. The spindle nucleated cells of cold-blooded animals, which Hayem regards as the analogues of the hæmatoblasts, are believed by Löwit[1] to be undeveloped leucocytes, for he claims to have seen them acquire a globular shape and distinct amœboid movements. From these remarks it is evident that the question whether the *hæmatoblasts* are physiological elements or pathological products can hardly be considered as settled.

The third section of the work is physiological, and treats of the modifications of the blood caused by age, constitution, individuality, race, digestion, diet, abstinence, inanition, menstruation, pregnancy, lactation; also of the changes which the blood undergoes during its circulation, and of the act of coagulation.

The chapters of greatest interest in this comprehensive section are those which deal with the blood of the newborn and with the act of coagulation. Hayem finds the number of red corpuscles per millimetre cube in the blood of the newborn to be equal to that of the most vigorous adults, and always notably superior to that of the mother. The average result of counts of the blood of seventeen infants was 5,368,000, the maximum being 6,262,000, the minimum 4,340,000. The number of corpuscles in the blood of the newborn seems to be influenced by the time of ligature of the umbilical cord. In six infants on whom the cord was tied immediately after birth, he found an average of 5,087,000, whereas in eight whose cord was not tied until the pulsations of the umbilical artery had ceased, he obtained an average of 5,576,000. During the days immediately following its birth, before the secretion of milk is established, the child loses weight, reaching its minimum in this respect on the third day. In this interval the number of corpuscles, both red and white, remains stationary until the body-weight reaches its minimum, when there is a sudden fall in the number of the white cells and a rise in that of the red corpuscles, which now usually attain their maximum. With the restoration of weight the number of leucocytes increases and that of the red corpuscles falls and remains permanently about 500,000 below the initial figure. The constitution of the blood of the young infant is remarkable for its instability, varying from day to day, independently of the body-weight. This striking peculiarity is believed by Hayem to depend upon the more or less active formation of new elements, in proof of which he states that the number of the corpuscles is invariably proportionate to their size, the rise in number always coinciding with an increased proportion of small corpuscles, and *vice versa.* According to Hayem, nucleated red corpuscles are never found in the blood of the newborn child, which differs notably in this respect from the young mammalia of the laboratory—dogs, rabbits, guinea-pigs. In the blood of the latter nucleated red corpuscles are present for several days after birth.

[1] Fortschritte der Medicin, May 15, 1888.

The reviewer's own observations on the blood of the newborn are not so numerous as those of Hayem, of which they are in some respects corroborative, in others not. Our maximum and minimum figures are very similar to his, although slightly higher. The former is 6,410,000; the latter 4,520,000.[1] Hayem does not mention the time after birth at which his examinations were made. Our highest count was made two hours and a half after the birth of the child. Our observations demonstrated that the number of the red corpuscles "may either increase or diminish during the first few days of life and that, in the newborn, as in the adult, there are great individual variations."[2] For the benefit of those who may undertake to examine the blood of the neonatus, we would state that a sufficient amount for the purpose cannot be obtained from any of the fingers, but that the great toe will furnish all that is needed.

The chapter on coagulation occupies one hundred and twenty-one pages, and discusses the subject in every possible bearing. The following *résumé* comprises the results of Hayem's researches as well as those of most of the principal students of this difficult physiological problem:

The liquids capable of forming fibrin may be divided into two distinct groups, of which the first, such as the blood plasma, the lymph and serous effusions, are spontaneously coagulable, and when raised to the temperature of 132.8° F. to 134.6° F., deposit a viscous precipitate, which is one variety of fibrinogen. Of this substance, the blood plasma contains the most, the serous effusions the least.

The second group comprises liquids not spontaneously coagulable, and which do not furnish a precipitate when heated up to 132.8°, but which do so on the addition of blood serum or of a substance of undefined composition known as fibrin ferment. Although these fluids do not precipitate by heat, they lose after being heated the property of coagulating on the addition of serum. The fibrinogen which they contain has, therefore, been modified in its nature by the application of heat. From these facts it is probable that coagulable liquids contain at least two kinds of fibrinogen, the one precipitable by a temperature of 132.8°; the other alterable by such a temperature, but not precipitable.

On account of its richness in formed elements, the blood occupies a place apart among coagulable liquids. Of these elements, the hæmatoblasts play the principal *rôle* in the act of coagulation, which is not complete until the viscous substance of these bodies has completely separated from their stroma.

A complete chemical theory of the act of coagulation cannot yet be formulated. All that can be affirmed is that fibrin appears to result from the transformation, probably by hydration, of various closely related albuminous matters which represent different varieties of the substance called fibrinogen. This substance gives rise to fibrin by its modification through the agency of organic matters proceeding from cellular decomposition.

Hayem attributes coagulation exclusively to the formation of fibrin (p. 256), which is, in the writer's opinion, a partial view of the subject. Our own ideas on the subject may be summed up in the following paragraph penned several years ago:

[1] See a Contribution to the Study of Icterus Neonatorum. Archives of Medicine, October, 1883.

[2] See article Blood, in Wood's Reference Hand-book of the Medical Sciences.

In the opinion of the writer, a blood-clot is the result of two distinct processes: coagulation proper and fibrin formation—the one chemical, the other morphological. Coagulation occurs in milk under the influence of a ferment (rennet), but there is no fibrin formation. The same process takes place in blood under the influence of a ferment derived from the white corpuscles, and, perhaps, also from the blood-plates (hæmatoblasts), while, at the same time, and *in addition*, there is formed a fibrinous reticulum which is a direct metamorphosis of the same elements.[1]

On turning over the pages of the fourth part of the work, the attention is attracted by an excellent drawing of the crescentic bodies first observed by Laveran in the blood of intermittent fever, and now regarded by many of the best hæmatologists as of parasitic origin. The section in which this plate appears is entitled "Pigmentary Degeneration of the Red Globules in Intermittent Fever," and the feeling excited by its perusal is one of regret that Hayem's opportunities for studying malarial blood have been so rare. He states, in fact, that he has observed the alterations described by Laveran in but one case, and then found nothing but the crescentic bodies, during an apyretic interval. With true scientific spirit, Hayem declines to express a positive opinion on a subject which he has not thoroughly investigated, but acknowledges that he is inclined to regard the changes described by Laveran and others as due to non-parasitic modifications of the red corpuscles. This has been the first impression of others to whom further study has brought the conviction that the peculiar and constant alterations in malarial blood can be due to nothing but a polymorphous hæmatozoön.

Omitting any detailed notice of the fifth part, which deals with such difficult and unsolved physiological problems as the development and renovation of the blood, we come to the sixth and last, which is exclusively concerned with its pathology. The practical interest of the work culminates in these final chapters, which treat of chlorosis, chloro-anæmia, progressive pernicious anæmia, leucocythæmia, post-hemorrhagic anæmia, toxæmia, symptomatic anæmia, etc.

The chapter on chlorosis should be studied by all who are interested in this most common disorder of the blood. Hayem is not among the number of those who hold that chlorosis is characterized by a normal, or nearly normal, number of red corpuscles more or less deficient in coloring matter, and, therefore, to be distinguished from anæmia, in which the diminution in the number of the corpuscles is the characteristic feature. On the contrary, he distinguishes three forms of chlorosis, a mild, a medium, and an intense, in accordance with the degree of anæmia present in each case. The fact that the percentage of coloring matter is lower than that of the number of red corpuscles, is mentioned by Hayem as one of the features of chlorotic blood; but this disproportion between number and color is by no means peculiar to chlorosis. For example, we recently examined a case of leucocythæmia and found the percentage of red corpuscles to be 59.6, while that of the color was 45. In numerous cases of scurvy we have also found the same disproportion. In one of the latter the percentage of corpuscles was 100+, and that of their hæmoglobin 65. In another the percentage of corpuscles was 55 and the color 30. In short, to argue, as some do, that chlorosis is specially distinguished by a low percentage of coloring matter,

[1] Archives of Medicine, vol. xii. No. 3, December, 1884.

both absolute and relative, is to display a limited knowledge of blood diseases. This criticism, it is needless to say, does not apply to Hayem, who makes no such statement. On the contrary, his views concerning the pathology of chlorosis are heartily endorsed, and especially the inference that may be legitimately drawn from them that chlorosis is nothing more than the anæmia of puberty.

With reference to the vascular hypoplasia (*aortis chlorotica*), first advanced by Virchow, as a cause of chlorosis, Hayem believes that it may be present in such cases as are distinguished by an obstinate tendency to relapse; but these are relatively rare.

The treatment of chlorosis receives due consideration. Hayem regards iron as indispensable in the treatment of chlorosis, and adapts the preparation to the case, believing that one to be most efficacious which is best tolerated by the stomach. It will be found, as a rule, among the proto-salts of the metal.

By the term chloro-anæmia Hayem designates chlorosis occurring in the course of another affection capable of producing anæmia. This may seem a refinement to those who have not been struck with the widely different effects of the same anæmia-producing cause. For example, in the course of a disease which either does not give rise to anæmia or does so in but slight degree, a patient may fall into a condition of profound anæmia altogether out of proportion to any apparent cause. In such cases it will often be found that there is a constitutional tendency to anæmia, a chlorotic diathesis. The principal diseases which, by their association with chlorosis, give rise to the various types of chloro-anæmia are dyspepsia, tuberculosis, uterine and puerperal diseases, neuroses, especially hysteria, and syphilis. In many cases the pathological combinations are so complex as to make a precise diagnosis almost impossible.

The chapter on pernicious anæmia is one of the best, but was written before the publication of Hunter's researches, which afford such strong evidence in favor of the view that this affection is essentially hæmolytic.

The important subject of leucocythæmia hardly receives the consideration it deserves, although the short space devoted to it contains much of interest. For example, Hayem states that nucleated red corpuscles are habitually present in the blood of leucocythæmia. He found them in four out of five cases, and in the case in which they were not found the blood was examined but once. With reference to the amœboid movements of the white cells of leucocythæmia, Gilbert, under Hayem's direction, found that those of normal size possessed normal contractility, but that certain giant cells, evidently hypertrophied, were destitute of amœboid movement.

These are some of the principal points of interest in the best book on the blood and its diseases that has yet been published. After reading it, one is much inclined to echo the sentiment with which its distinguished author begins it: "*L'avenir appartient à l'hématologie.*"

F. P. H.

THE USES OF ELECTROLYSIS IN SURGERY. By W. E. STEVENSON, M.D. Cantab., M.R.C.P., in charge of the Electrical Department at St. Bartholomew's Hospital, Physician to the Grosvenor Hospital for Women and Children, late House Surgeon to St. Bartholomew's Hospital and to the Hospital for Sick Children, Great Ormond St. 12mo., pp. xii., 186. London: J. & A. Churchill, 1890.

THERE is perhaps no one who has studied the subject of electricity in its application to medicine and surgery who is entitled to a more respectful hearing than the author of this book; and if common report were wanting as the source of such a statement, the very fair and dispassionate way in which he has treated his subject would be sufficient to call it forth. There is no dearth of books on medical electricity; there are few which can give information to the non-electrical expert as concisely and intelligibly as this. This would seem flattery if one were not familiar with this department of literature.

Success in the use of electricity does not blind the author to the fact that for certain conditions surgery can never be displaced. He gives due weight to the objections that the practice of medical electricity means investment in costly apparatus, and a knowledge of the laws and phenomena of this physical force which is not acquired without careful preparation, and he admits, as some enthusiasts do not, that not a few dangers attend the application of it. He rejects the sophism that the galvanocautery produces effects which differ materially from those produced by heat from any other source, and clearly defines the difference between cautery and electrolysis. We are also glad to see that he advocates, as a rule, the use of mild currents, and for short periods of time. Hence, on the score of safety and judicial expression, he will be found a wise counsellor.

In the application of electricity to gynecology he is somewhat less radical than Apostoli, and for American and English readers who have not had the privilege of seeing Apostoli's work his arguments will be more satisfactory, especially in the diminished prominence of the personal element. His endorsement of the work of Newman in connection with the treatment of urethral stricture is unequivocal, and he fails to notice the adverse opinions of Keyes, Otis, and others concerning certain features of that work.

The impression that he leaves, aside from that of his candor and fairness, is that we have in electricity an agent of very great value for certain diseased conditions, but that it is no plaything; that even with the expensive batteries, meters, and other appliances, it is not an instrument of precision, for unless one is sufficiently a master of his apparatus to be able to adjust it and test it before each time of using it, something may go wrong, perhaps to the great damage and disappointment of both patient and physician. The writer does not mean to disparage electricity as a remedial agent any more than does the author whose book is under consideration; on the contrary, he is a firm believer in its great value. But he also believes that the agent is too often used without proper comprehension of its effects or of the laws which govern it, and such practice ought to be discouraged. It would be well if more attention were given to instruction on this subject in our colleges and hospitals,

for there are plenty of occasions in the experience of almost every physician when the use of electricity is indicated above all things else. Until such instruction is obtainable, books like this must hold the first place in imparting information upon this very important subject.

A. F. C.

CLINICAL LECTURES ON VARICOSE VEINS OF THE LOWER EXTREMITIES. By WILLIAM H. BENNETT, F.R.C.S., Surgeon to St. George's Hospital, etc., London. 8vo., pp. 93. With three plates. London: Longmans, Green & Co., 1889.

THIS small work is divided into four parts, each consisting of a lecture, of which all but the third have already appeared in the *Lancet*. Lecture I. embraces deductions from statistics of 574 cases of varicose veins of the lower extremity treated at St. George's Hospital, London, and terminates with a summary of "probable causes." The single, perhaps, novel point brought out in this chapter is the much larger proportion of cases presenting in males than in females, if pregnancy as a causative factor is eliminated.

Lecture II. deals with (*a*) diagnosis in the incipient stages and (*b*) with the symptoms, mode of formation, and significance of circumscribed varix at the saphenous opening. (*a*) Diagnosis of late stages is, of course, palpable, but could we foretell the advent of this always distressing condition, treatment could be thereupon begun and would, most likely, prove valuable in proportion to the earliness of its institution. Also, early recognition is valuable in the determination of which veins are primarily and which secondarily become involved—a point of great value should operative interference prove necessary. As the author points out, hospital patients do not usually present themselves until the disease is well advanced, but in private practice, where slight ailments are more attentively regarded, he has had opportunities in large number to study and follow up the pre-varicose condition. This portion of the work is untilled ground so far as text-books are concerned, and will repay careful consideration. (*b*) Here are pointed out two distinct varieties of saphenous varix, their symptoms, and differential diagnosis; the varieties being accounted for by conclusions from elaborate studies of the normal and anomalous veins and their valves which may be involved. The significance of saphenous varix in relation to general varicosity of the limb is also discussed in theory which the author has been able partially to bear out by experiment and dissection. The anatomical study here presented is valuable in that it represents the result of many special dissections.

Lecture III. describes treatment for mild and uncomplicated cases. The point is taken that exercise should never be abandoned by those suffering from lesser degrees of uncomplicated varicosity, but that the exercise should be of various kinds and not such as to use rhythmically the same muscles to a point of fatigue, as, for instance, in bicycle riding. Constantly varying muscular action is beneficial, for then the same vessels are not continually pressed upon and circulation is promoted, while monotonous exercise tends to increase blood pressure and varicosity by constant back pressure in the same direction. Much infor-

mation is gathered into the chapter regarding the application of bandages, apparatus, etc., but as it includes nothing new of note, it calls for no special consideration here.

Lecture IV. is devoted to a consideration of the radical treatment of varicose veins, and is decidedly the most useful and readable portion of the book. The various subcutaneous operations are very properly relegated to obscurity in modern surgery. Then are described the operations of single or multiple simple ligations, ligations with excision of vein between; and, lastly, bodily excision of large portions of, or the entire diseased plexus, in exaggerated varicosities. The conditions for which the author urges radical operations as a palliative measure are: circumscribed varix of the saphenous opening, and "creeping" thrombus. In many cases of the former he has had a very remarkable subsidence of both tumor and symptoms—a complete cure, in fact—after cutting out a considerable section of the saphena vein at a much lower point, the probable explanation of which result is given in Lecture II.

The object of the proposed operation in cases of creeping thrombus is to separate the constantly extending clot from the proximal patent end of the vessel by dividing and excising a portion of the vein between two ligatures above the thrombus; or, if not extensive, it is proposed to excise the portion of vein containing the entire thrombus, and thus to do away with the undoubted tendency to coagulation which is produced by the presence of the old clot.

The plates appended to the work illustrate, before and after operation, three most successful cases of extensive varix excision and serve to demonstrate how much can be accomplished by radical interference in judiciously selected cases.

The monograph as a whole is well worthy of attention, but particularly so are Lectures II. and IV., which contain many genuine accessions to our knowledge of this poorly understood and rather neglected subject.

PAPERS ON DERMATOLOGY. By E. D. MAPOTHER, M.D., ex-President Royal College of Surgeons in Ireland, etc. 8vo, pp. 104. London: J. & A. Churchill, 1889.

IN part this book is a reprint of several papers from the author's *Lectures on Skin Diseases*, and also of several papers which have since appeared in journal literature, all having been, however, subjected to more or less revision and amplification. Many of these, it is true, are familiar to the profession, but as they contain much that is suggestive and valuable, will admit of second reading. Of the subjects discussed, "The Vascularity of the Skin and the Communications of Subcutaneous with Visceral Veins," "The Correlations of Eczema and Gout," and "The Treatment of Angioma," are probably the most interesting and important. H. W. S.

PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

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The Clinical Value of Somnal and Chloralamide.

Notwithstanding the fact that chloralamide has already been frequently mentioned in the pages of this journal, it seems necessary to revert to it again on account of the results obtained by Dr. Adolf Robinson, at the Friedrichshain City Hospital, Berlin. This writer has carefully noted the effects which followed the administration of thirty grains of chloralamide to each of fifty selected hospital cases suffering from a great variety of diseases, and has also done the same with somnal.

In order to form an opinion concerning the relative hypnotic value of the two drugs, the number of hours of sleep was recorded, and the patients divided into three classes accordingly, thus: 1, those who slept soundly; 2, moderately; and 3, very little. The following table shows the results at a glance:

	Number of patients sleeping		
	Soundly.	Moderately.	Very little.
Chloralamide	13	14	23
Somnal	15	13	22

From these figures it is evident that somnal failed to produce sleep in forty-four per cent. of the cases, and chloralamide in forty-six.

Several disagreeable phenomena appeared during the use of these drugs. Shortly after thirty grains of chloralamide had been given to each of three cases of uncompensated valvular disease of the heart, an alarming acceleration and weakening of the pulse was noticed. In one case the rate changed in a short time from 62 to 108 per minute, and the depression lasted for some time. A similar occurrence was noted in three out of four patients with typhoid fever who received a similar dose. Subsequently the same drug was

tried in smaller doses on the same patients; no disturbance of the heart's action resulted, likewise no sleep. Thirty grains of somnal were also given, and the pulse was found to decrease in rate, the volume remaining unchanged. Sleep followed in broken naps.

All of the patients were easily aroused. The most prolonged and the deepest sleep was produced by the combined action of both drugs; yet even in these cases the lightest touch would waken them.

Disturbances in the digestive tract were not infrequent. Abdominal pain was observed fourteen times after the exhibition of somnal, and nine times after chloralamide. One dose of thirty grains and four doses of forty-five grains of somnal were vomited within an hour of taking the drug. In two cases severe vomiting continued for several hours. Many patients complained of abdominal pain on the next day. Continued use of somnal appeared to impair the appetite; headache and dizziness were frequently complained of on the morning of the second day.

Sometimes a restless and excited condition came on two or three hours after taking chloralamide, some patients attempting to get out of bed and walk about, but toward morning they would go to sleep, and often slept most of the forenoon; in three cases, however, the stage of excitement lasted for a whole day. In the cases of typhoid fever forty-five grains of the somnal appeared to increase the restlessness, and on the next day there was more vomiting than usual; but a dose of thirty grains generally quieted them.

In patients suffering from mental excitement a decided benefit was attributed to the use both of somnal and of chloralamide in repeated doses of thirty grains. Of the former ninety grains and of the latter sixty grains were given daily without appreciable change in the heart's action. Robinson says: "In this class of patients chloralamide appears to act as promptly as chloral."

Taking all of these factors into consideration, the writer concludes that these two new drugs will not replace the older and more reliable hypnotics, but will prove useful in the treatment of certain cases.—*Deutsche med. Wochen.*, No. 49, 1889.

Menthol in Acute Rhinitis, Influenza, and other Affections of the Nose and Throat.

Mr. J. Lennox Browne, F.R.C.S. Ed., writes in the *Medical Press and Circular*, January 8, 1890, regarding the use of menthol in the above affections. He says that the vapor of menthol checks in a manner hardly less than marvellous, acute colds in the head, and is also to be recommended with a certainty of success, if used on its first onset, in arresting or as a preventive of infection in epidemic influenza, and this even for cases in which the nasal symptoms commonly associated with the word influenza are not manifested.

Menthol exerts its action in the following manner:

1. It stimulates to contraction the capillary bloodvessels of the nose and throat, always dilated in the early stages of head cold and of influenza.

2. It arrests sneezing and rhinal flow.

3. It relieves, and indeed dissipates pain and fulness of the head by its analgesic properties, so well known by its action when applied externally to the brow in cases of *tic douloureux*.

4. It is powerfully germicide and antiseptic. It thus kills the microbe of infection, and prevents its dissemination.

The remedy may be employed by means of a general impregnation of its vapor through a room or house, or locally to the nostrils and air-passages; for both which purposes there are several methods:

a. A ten to twenty per cent. solution of menthol in almond oil, in liquid vaseline, or in one of the many other odorless paraffin compounds, can be sprayed into the nose or throat, or about a room.

b. By placing twenty or thirty grains in an apparatus specially designed by Rosenberg for administering the drug in cases of laryngeal consumption by inhalation in the form of vapor mingled with steam.

c. By placing a similar amount or one or two drachms of the oily solution in a Lee's steam-draft inhaler, or bronchitis kettle:

d. By a simple arrangement of placing a saucer of water containing a similar quantity of the crystals over a gas burner in the hall, by means of which the whole house is kept constantly permeated with the drug.

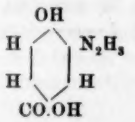
e. But by far the most convenient method for personal use is to carry always the ingenious pocket menthol inhaler, known as Cushman's, which should be used not only on the first approach of an attack, but three or four times a day during an epidemic, and always in cold-catching weather by those subject to head colds.

The instrument consists of a glass cylinder four inches in length, half an inch in diameter, and open at both ends. The tube contains crystals of menthol closely packed and prevented from escape by perforated zinc and cork. The opening at one end is twice the size of the other, the larger being intended for inhalation by the mouth, and the smaller for the nostril. The latter is the method which the author by preference recommends. It is not to be simply smelt, but well sniffed or inhaled, so as to cause some tingling or smarting, a sensation which is quickly followed by that of coolness, and openness of the previously "stuffed" and heated nostril.

The author concludes: "I have also employed menthol with advantage in the form of nasal spray, or brush application in diphtheria. For all forms of nasal disease causing obstruction to the natural breathway, I prescribe the menthol inhaler to the extent of hundreds per annum. By its use, when the nasal discharge is excessive, it is checked; when deficient and thickened, as in hypertrophic rhinitis, its healthy character is restored; and when arrested, inspissated and malodorous, as in atrophic rhinitis, fluidity is promoted and the foul smell corrected."—*Boston Medical and Surgical Journal*, Jan. 30, 1890.

Orthin.

Prof. R. Kobert introduces a new antipyretic under the name of orthin. Its full name would be orthohydrazinparaoxybenzoic acid, as may be seen from the following formula:



This substance, although strictly speaking an acid, possesses basic properties. When uncombined it is very unstable, but in the form of a chloride it, may be kept, probably for months, in a dry state; but a solution in water must be made fresh when wanted. This solution when fresh is colorless, and is a strong reducing agent.

A dog of twelve kilogrammes in weight, received a gramme dose by the mouth once a day for four successive days, and other animals similar amounts, without loss of appetite or other disturbance. The temperature was not reduced below normal limits. Even larger doses were well borne, a kid, of three kilogrammes, receiving five grammes of the drug at a dose and showing no effect therefrom, except slight temporary intoxication. The urine was found to contain a reducing agent of such strength that Fehling's solution was immediately reduced in the cold. This agent was removed by ether, and then appeared as a brown substance. The reducing power of the urine in the case of the kid persisted after the single dose in diminishing amount for thirteen days. On the day after this experiment, two grammes of grape sugar were found in the urine, and less amounts in other cases. By further experiments on the appearance of glucose the conclusion is reached that orthin hinders the normal reduction of sugar in the blood and other tissues of the body. In the laboratory a solution of the drug in the blood in the ratio of 1 : 100,000 was found to dilate the bloodvessels. Kobert himself had no opportunity of testing orthin clinically, but suggested its use as an antipyretic, analgesic, and in certain diseases of the skin.

This has been undertaken by PROF. UNVERRICHT. As an antipyretic he used it in cases of typhoid fever, pneumonia, articular rheumatism, phthisis pulmonalis, pleurisy, and scorbutus, with very varying results. Sometimes a dose of 8 grains produced no effect; in other cases 6 grains was followed by a very pronounced fall of temperature two hours after the administration of the drug, with symptoms of collapse and profuse perspiration, followed by a chill and a return of the temperature to its original height. These chills, which were nearly always noticed, were not the only disagreeable effects, but eructations, vomiting, pain in the stomach, and later diarrhœa; also headache, sleeplessness, and a general feeling of depression sometimes occurred, even in cases in which no effect on the temperature had been produced. As an analgesic orthin was generally unsatisfactory. In one case, a medical student, who suffered from supraorbital neuralgia, a dose of 1½ grains produced a feeling of great oppression, but from that day he has not had a return of the neuralgia. Finally, in cases of psoriasis, orthin was applied externally in a ten per cent. ointment, but with less satisfactory results than were obtained from chrysarobin, which was used on the same patient as a control experiment.

The author concludes from his investigations that orthin, on account of the disagreeable effects which it often produces, as well as on account of its uncertainty, must be considered generally inferior to preparations now in use, but suggests that its action in neuralgia should receive further study.—*Deutsche medicin. Wochenschrift*, January 9, 1890.

Exalgine.

A short study of exalgine, with clinical notes of a few cases, is the subject of an article by Dr. Alexander B. Pope. Exalgine, recently discovered by Brigonnet, occurs either in fine acicular or long tablet-like crystals. It is only slightly soluble in cold, more soluble in hot water, and very soluble in dilute alcohol. Chemically it is methyl acetanilide, and is prepared by treating sodium acetanilide with iodide of methyl.

When given in doses of five grains, and repeated at intervals of four hours, no unpleasant effects have been noticed except in one case, where ringing in the ears and vertigo were complained of. Thus far no unpleasant effects have been noted upon the gastro-intestinal tract. It is an antipyretic, but is less powerful in this respect than antipyrin. It is an analgesic, and said to be more efficient than antipyrin or phenacetin. Its primary action is upon sensibility, and, secondarily, upon temperature. Good results have attended its use in visceral neuralgias. As an anti-rheumatic remedy it possesses some power, but is not to be compared with the salicylates. It has showed in several cases a distinct tendency to cause sleep. A tolerance of the drug is established by use, as is shown by experiments on animals, and a similar effect seems to be produced in regard to neuralgia in man. It is a powerful remedy and capable of causing death or severe toxic symptoms, if not prescribed with the greatest circumspection.

Exalgine is best ordered in alcoholic solution, but it may also be given in powder.

The author concludes that exalgine acts favorably in some cases where antipyrin and phenacetin have failed or for some reason are contra-indicated. The initial dose should not exceed five grains, and care should be exercised in repeating the dose. It probably possesses a certain degree of hypnotic power. It may cause symptoms resembling angina pectoris. Its most useful sphere of action thus far developed is in the treatment of pain. It has the advantage of not causing irritation of the stomach, rash, cyanosis, etc., so often seen after the use of antipyrin or acetanilid.—*New York Medical Journal*, February 22, 1890.

Poisoning by Exalgine and Acetanilid.

Mr. T. Jessopp Bokenham and Dr. E. Lloyd Jones report two cases of poisoning by the acetanilids. The first case, a girl aged twenty-four years, had myelitis, with great pain in the back and limbs, to relieve which exalgin (methyl-acetanilid) was given for five days in doses of two grains ter die; then doubled for two days, and finally six grains ter die were given for a week. At the end of that time, suddenly, the lips and cheeks were noticed to be blue and the pulse small and compressible, but not rapid, the temperature being normal. The cyanosis continued to increase, and five hours later the patient vomited, after which her nails and lips and cheeks were deeply cyanosed, but her feet were neither blue nor cold; frothy saliva escaped from the mouth, and she became delirious, with a temperature of 99°, and pulse 144, very small, regular, and compressible. She then began to improve, and five hours later had nearly recovered.

The second case, a lady, aged forty-three, very subject to migraine, had been for some months much relieved by antipyrin, but latterly this had failed; acetanilid, however, in doses of 8 grains, had generally been successful in relieving the pain. One morning the patient was seized with a severe attack shortly after rising. At 10.30 A.M. she took 4 grains of monobromo-acetanilid, and at 11 another. She noticed that her lips were blue; but as her headache was not better she took 8 grains of acetanilid at 11.30, and repeated it at 12.15 and 1 P.M. She soon became very cyanosed, and in about two hours lost consciousness for a short time. Her headache persisted, and she complained of great pain in the left shoulder, starting from the cardiac region and running to the tips of the fingers. The pulse was very weak and rose to 120. These symptoms gradually passed off during the night.—*British Medical Journal*, February 1, 1890.

More about the Action of Chloroform.

On his return from India, Dr. Lauder Brunton delivered an interesting address at the Medical Society, reviewing his work at Hyderabad. The conclusions which have already appeared in this journal were reiterated and supplemented with further details.

The discussion which followed was of more than usual interest. While admitting the force of Dr. Brunton's arguments as applied to the lower animals, the practical anæsthetists present deprecated the extension of conclusions drawn from the lower animals to man, unless positive evidence of uniformity of behavior in chloroformed men and beasts was adduced. It was also pointed out that the evidence of the action of the drug upon the heart was wholly negative, while the positive clinical observations of Snow, Clover, and living anæsthetists were directly opposed to this view.

While conceding the obvious and great value of experiments made upon the lower animals to elucidate conditions prevailing in man, one of the speakers pointed out that considerable divergence of reaction toward chloroform existed in different individuals, and that this was an additional reason for not relying too much upon negative evidence advanced by experimental research. None will seek to diminish the great value, both scientific and practical, of Dr. Brunton's painstaking researches, and it must be accepted as a sign of respect to him that so eager and lively a discussion was elicited by his description of his part in the work of the Hyderabad Chloroform Commission.—*Lancet*, February 15, 1890.

The Constituents of Cod-liver Oil.

At a recent meeting of the Académie de Médecine Dr. Armand Gautier presented the final results of his experimental research on the composition of cod-liver oil and the therapeutic action of its various ingredients. The fats have a slight acid reaction and are very readily emulsified in consequence of a small amount of bile which is present in the oil. They are easily absorbed and act chiefly to maintain the bodily heat by their combustion, and render unnecessary the oxidation of important tissues. Phosphorus in the form of organic phosphates, lecithine, and phosphoric acid, is present in consider-

able quantity. These compounds are readily assimilated and add materially to the nutritive properties of the oil. Iodine and bromine occur in very small amounts, intimately combined with organic bases. The alkaloids of cod-liver oil form quite a numerous class. The most important ones—butylamine, amylamine, morrhuine, and morrhuic acid—appear to act through the nervous system to hasten the metabolism of the tissues of the body. They are also diaphoretics and diuretics, and increase the appetite.

These results have been obtained by isolating the individual alkaloids and testing their action in laboratory experiments. Amylamine in large doses gave rise to tremor and convulsions in animals, while smaller amounts induced polyuria. These alkaloids are for the most part removed in clarifying the oil, and this fact should be borne in mind in prescribing it.—*La Semaine Médicale*, February 5, 1890.

Local Anæsthesia by Cocaine.

Reclus, in the *Congrès de Chirurgie*, 1889, regrets that this drug has not come into more general use. He has given it hypodermically over seven hundred times, and, in spite of the fact that it has been stigmatized as inefficient and dangerous, has met with very satisfactory results. To obtain the best local anæsthesia for surgical purposes the injections should be made "intradermically;" although local applications to mucous surfaces may often be employed for slight operations. The injections of cocaine should be confined to the skin and not be made into the subcutaneous tissue. Where the skin is thick, or where there is thickening from inflammation, several injections may be made, one over the other. For operations about the rectum and anus he advises the use of a rectal tampon wet with a two per cent. solution of cocaine and a circle of injections around the anus. Under this treatment he claims that the sphincter can be stretched and paralyzed without the least pain.

No accidents have attended the use of the drug in his practice. Reclus only found four fatal cases of cocaine poisoning recorded. The fatal dose was respectively: 0.75, 1.20, 1.25, and 1.50 grammes (10¾, 18½, 19¼, and 23 grains). With doses of 20 centigrammes (3 grains) accidents were very infrequent; but occasionally pallor, shortness of breath, loquacity, and a tendency to faintness were noticed. Generally 10 to 12 centigrammes (1½ to 2 grains) were sufficient.—*Journal of American Medical Association*, February 8, 1890.

The Value of Sodium Silicofluoride as an Antiseptic.

Mr. T. Jessopp Bokenham reports the results of his experiments with silicofluoride of sodium for the purpose of ascertaining whether the drug could be safely given internally as an antiseptic, as had been claimed by Mr. William Thompson, who introduced it in 1888, and had given it in doses of one-half to one grain. The action of the salt on fermentation was first studied, and found to prevent alcoholic fermentation in the strength of $\frac{1}{750}$, and to delay it from $\frac{1}{800}$ to $\frac{1}{1050}$; but in the latter strength it can hardly be considered antiseptic. Its presence in nutrient gelatine in the ratio of $\frac{1}{2000}$ produces no effect on the growth of the bacillus anthracis. Small amounts of a solution of the drug in water killed guinea-pigs when introduced into the stomach or when given hypodermically. A dose of 8 grains of the

solid salt taken by different persons after a meal produced at the end of an hour eructations with great nausea, accompanied by a feeling of lassitude, which lasted for some hours.

Although differing from other observers, the author considers his experiments sufficient to dispute its high value as an antiseptic, and to condemn its internal use.—*British Medical Journal*, February 15, 1890.

Aristol.

Dr. P. J. Eichhoff has used aristol, which is a compound of iodine with thymol, both as a substitute for iodoform, and also in some forms of skin disease in which the application of iodoform has not been successful. It is applied to the skin in the form of a ten per cent. ointment and covered with gutta-percha paper. He has already used it in cases of varicose ulcer, ulcerating lupus of the face, chancroid, psoriasis, mycosis trichophytina capillitii, scabies, herpes tonsurans, eczema, and congenital syphilitic ulcer. From his experience he draws the following conclusions: Aristol is always harmless, non-poisonous, and odorless. In only one case—chancroid—was its therapeutic action less satisfactory than would have been expected with the use of iodoform. In a case of psoriasis, although slower in its action than the older agents—chrysarobin, pyrogallic acid, etc.—it possesses the advantage of being non-poisonous and of not producing unpleasant concomitant effects. In another class of skin diseases, the mycoses, aristol is quite as efficacious and at least as rapid and unirritating in its action as other remedies. In cases of varicose and syphilitic ulcers a quicker result may be expected from its use than by any other means. The same may be said of its use in lupus. The author recommends that it be given a thorough trial in surgical and gynecological practice.—*Monatshefte für prak. Dermat.*, No. 2, *Zeitschrift für Therapie*, February 1, 1890.

Preparation of Ergotin for Hypodermic Injection.

According to Mr. A. W. Gerrard, the officinal ergotin (B. P.) is merely a purified extract of the crude drug. The chief objection to its hypodermic use is the irritation it causes, which, however deeply it may be injected into the muscles, is at times very great. Gerrard finds that ergotin is very acid in reaction and full of inert matter, and that if these are eliminated great improvement results. For this purpose one part of ergotin may be treated with four parts of absolute alcohol, stirring well during the addition. Then pour off the alcoholic solution and evaporate over a water bath to a soft residue. This treatment removes inorganic salts and a mucus-like substance. The acid still remains, and should be carefully neutralized with a solution of ammonia. Ergotin thus treated is highly active, and rarely causes severe irritation after injection. To prepare a solution that keeps well for hypodermic use, rub up one part of ergotin with one of glycerin and two of water.—*Illustrated Medical News*, January 25, 1890.

Antipyrin and Thallin as Hæmostatics.

Dr. Moncorvo, in the *Journal de Médecine de Paris*, calls attention to the direct hæmostatic action of antipyrin and thallin. He believes this action

due to a constriction of the divided vessels as well as to coagulation of the blood, but says that further experiments are necessary to establish the truth of this assertion. The hæmostatic action of these drugs has been studied both in the laboratory and clinically. Acetanilide and phenacetin do not possess this property.—*Journal of American Medical Association*, February 1, 1890.

Official Trial of Amadon in the Treatment of Carcinoma.

In two cases of uterine cancer occurring in his clinic, Professor Slaviauski administered amadon (polyporus igniarius) which had been asserted to be a certain remedy for the disease. This was done at the request of the Russian Minister of War. A decoction of six drachms to three pounds of water was made. A teacupful was given internally from three to five times a day, and an injection of the same an equal number of times. Dr. J. Lapis states that there have been no beneficial effects from this treatment, and that all reported cures must be due to a false diagnosis.—*Lancet*, February 15, 1890.

Ural, a new Hypnotic.

La France Médicale gives a brief description of ural. It is said to bear a close resemblance to somnal. It is obtained by mixing urethane and chloral; it occurs in crystals soluble in alcohol, and but little soluble in water. The melting point is 106°, and it volatilizes without decomposing. The taste is bitter; it does not modify blood-pressure; no untoward accidents have as yet been reported from its use. It is claimed that it is a pure hypnotic, and should be used for the insomnia of cardiac diseases and in mental and hysterical wakefulness.—*New York Medical Journal*, February 1, 1890.

MEDICINE.

UNDER THE CHARGE OF

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Influenza.

Baumler (*Münch. med. Wochenschr.*, 1890, No. 2) in discussing the epidemic, especially as it appeared in Freiburg, says that there is no doubt that it is an infectious disease. The question arises whether it is a miasmatic, a contagious miasmatic, or a purely contagious disorder. The great rapidity

of its spread would indicate the former; but it is not possible that all the germs for such a wide distribution could come from one place, and it is scarcely conceivable that suitable conditions for multiplication of the germ in the earth, and the formation in this way of new miasmatic foci, could be present in all the places in which the disease breaks out. It is, therefore, probable that the human body itself forms the nidus for the germ, and that we have to do with a contagious-miasmatic or a purely contagious disease. The absence of discoverable period of incubation might be urged against this belief, but the author does not consider this objection of any weight, and is of the opinion that the disease is a purely contagious one, with a very intense contagiousness and a very short period of incubation.

Although the general susceptibility to influenza is very great, yet, as in other infectious diseases, many individuals exhibit total immunity.

The symptoms vary greatly, and there may be an entire absence of all catarrhal implication of the respiratory passages. Very often the affection begins with sudden and high fever, vomiting, sometimes diarrhœa, pains in the joints, and general depression; while at the height of the fever there often appears great redness of the conjunctiva, face, and mucous membrane of the throat. Sometimes the temperature falls with a sweat after twenty-four hours. In other cases catarrh of the respiratory passages develops with the commencement of the disease, and extends, and the fever lasts some days. An almost constant symptom in the cases observed was a slight but evident enlargement of the spleen. Slight icterus was seen in almost all the cases.

Anatomical and Bacteriological Observations on Influenza.

Ribbert (*Deutsch. med. Wochensch.*, January 23, 1890) has made eight autopsies on persons who had suffered from influenza, and two of whom were pure cases of the disease, the other six being complicated by pneumonia.

The gross anatomical appearance of the lungs in the pneumonic cases differed from those seen in ordinary croupous pneumonia, in that the cut surface was almost smooth instead of granular, and the exudate soft and very rich in cells, but with little fibrin. In three instances the infiltration was lobar, and in three lobular.

In all the cases there was a variable intensity of redness of the mucous membrane of the trachea, large bronchi, and sometimes of the larynx, due to marked cellular infiltration of the mucosa and congestion of the bloodvessels. In all the cases the spleen was enlarged and soft. The kidneys exhibited cloudy swelling of the parenchyma in one case, and fatty degeneration in another.

Other changes in the different organs, noticed in some cases, were independent of the influenza, but probably exerted a deleterious action upon its course. Bacteriological studies were carried out more or less completely in seven of the cases, especial interest centering in the two in which there had been no pneumonia. Though both a staphylococcus and a streptococcus were present in some instances, the author concluded that only the streptococcus (pyogenes or of erysipelas) is the characteristic microörganism present, as the staphylococcus was only to be found in the trachea and lungs, and not always there. It is not certain that the coccus produces the influenza, although

we recognize it as the usual cause of secondary diseases. Thus it can be found in the numerous secondary affections at times arising in the course of diphtheria, scarlatina, typhoid fever, etc. A certain number of cases of croupous pneumonia are due to it; notably the very fatal class in whom the lung is smooth on section and softer and richer in cells than in ordinary cases. The many forms in which grippe shows itself would indicate the presence of such a microbe capable of producing many different symptoms. Supposing that the streptococcus is in effect the cause of influenza, we must assume, in order to explain the occurrence of epidemics, that the microbe is enormously increased in numbers through unknown causes, and widely disseminated through atmospheric influences. The port of entrance for it must be the respiratory tract, and this, perhaps, explains why neither erysipelas nor suppuration is produced by it.

The author does not consider it at all proven that the streptococcus produces influenza, and admits the possibility that it simply finds an unusually favorable nidus in this disease, while the real cause is some virus still undiscovered.

Disinfection of the Dejections of Typhoid Fever and Cholera.

Schauz (*Deutsch. med. Wochensch.*, No. 77, January 23, 1890) carefully reviews the literature of the subject in the effort to discover a reliable method of disinfecting the fecal dejections of cholera and typhoid patients. With especial care he studied experimentally the action of quick lime in disinfecting the feces. He found that it was excellent for fluid substances, but was unsuited for penetrating into the interior of solid particles of fecal matter; as it formed a firm, insoluble precipitate which coated their exterior, while in the interior the germs remained uninjured.

He advises that acids be employed for disinfecting the passages in these diseases, as their value has been already proved. According to his calculations, the following amounts of the different acids are required:

Of a mixture of 100 grammes crude H_2SO_4 and 1 litre of water, a quantity equalling one-fourth the volume of the stool is required in typhoid fever, and one-sixth the volume in cholera.

Of a mixture of 150 grammes crude HNO_3 and 1 litre of water, one-half the volume is required in typhoid fever, and one-fourth in cholera.

Of a mixture of 250 grammes crude HCl and 1 litre of water, one-half the volume is required in typhoid fever and one-third in cholera.

Of vinegar, or pyroligneous acid, two-thirds the volume are required in typhoid fever, and one-half in cholera.

Of five per cent. carbolic acid solution, three-quarters the volume is required in typhoid fever, and one-half in cholera.

Masked Intermittent Fever in Children.

Morris J. Lewis (*University Medical Magazine*, March, 1890) comments on the large number of cases in which intermittent fever in children is masked. He has noticed that bronchial catarrh occurs with especial fre-

quency, not merely as one of the symptoms of the attack, but sometimes as the only symptom of prominence, and that for which treatment is asked.

Of 113 cases of intermittent fever presenting themselves for treatment at the Children's Hospital in Philadelphia, during the year 1887, thirty-four (thirty per cent.) were instances of marked intermittent, having bronchial catarrh as the prominent symptom. A certain number of the cases were at first treated with chloride or carbonate of ammonium with little benefit, while relief at once followed the administration of quinine. In cases of ordinary bronchitis, quinine did not appear to be of any benefit. Many of the children were quite pallid, and had slightly enlarged spleens. Intermission in the bronchial symptoms did not appear to be at all marked. In many of the cases the diagnosis depended largely on the fact that the patients came from a district known to be malarious. A case which he reports is a typical example: A child of ten years had for about a week suffered from very severe cough with abundant expectoration. He then began to experience chilly sensations, especially in the evening. Fever was not a prominent symptom. The spleen was slightly enlarged, and the usual symptoms of bronchitic catarrh were present. Improvement in all respects began immediately after he was put on ten grains of quinine daily, and in a short time he was well.

On Pfeiffer's Test for Latent Gout.

Roberts (*Lancet*, January 4, 1890), in commenting on this test, describes it as follows: The acid urine of twenty-four hours, after preliminary filtration, is divided into two portions. One of these is passed through a filter on which some chemically pure uric acid has been placed. The other portion is not so treated. An equal volume, say 100 c. cm. of each portion is then acidulated with strong hydrochloric acid, and set aside until the precipitated uric acid has fully separated, which is then collected on a dried filter and weighed. Pfeiffer claimed that the results of this method should indicate the presence of the gouty state and of the state of uro-lithiasis, even when none of the usual symptoms of the disorders were present. He stated, namely, that in the case of persons free from lithiasis the portion of urine which had been passed through the uric acid filter yielded as much or nearly as much uric acid as the other portion; while in persons suffering from gout or uric acid gravel the portion of urine passed through the uric acid filter deposited so large a proportion of its uric acid there, that after treatment with hydrochloric acid it no longer yielded any, or only a slight, precipitate of it. Pfeiffer concluded that in the urine of gouty or lithæmic subjects a large proportion of the uric acid existed in the urine in a free or easily separable state, and not as a urate, as it does in healthy urine.

The uric acid placed on the filter, like the stone in the bladder, attracts to itself the free acid in the urine, allowing the combined acid to pass through. He claimed that in this test we have an infallible method for recognizing latent gout.

Schetelig has made similar studies, and accepts Pfeiffer's conclusions.

Roberts has been led to undertake a series of experiments in the same line. These speedily convinced him that acid urines in passing through a uric acid

filter deposited a part of their uric acid on the filter. He confirmed the observation that the amount subsequently precipitated after treating the urine with hydrochloric acid varied very greatly, but he was unable to interpret these results as evidences of the existence or non-existence of the gouty or gravelly state. He found, namely, that the urine of persons certainly free from gout deposited on some days nearly all their uric acid on the uric acid filter, while, on other days, only a small proportion of the acid adhered to it. A still more important objection to the value of the test was the observation that the uric acid filter did not serve to separate the free from the combined acid. For, if it be true that the free acid is removed by filtering, there should be no additional loss of acid on a second or third filtration. But repeated experiments showed that the urine progressively lost its uric acid when subjected to repeated filtration; three being generally sufficient to clear the urine of *all* of it. Pfeiffer's assumption as to the value of the test is, therefore, entirely disposed of.

Roberts believes that the deposition of uric acid on the filter is due to the action of the crystals, previously placed there, upon the urates, already on the point of undergoing the decomposition to which they would, in any case, succumb in the course of a few hours or days. The precipitation of the uric acid is simply greatly accelerated by the presence of the crystals, which act as a potent soliciting agent. The varying and inconstant results depend on several factors; namely, the degree of acidity of the urine, the comparative richness of the urine in uric acid, the rate at which the filtration is conducted, and the quantity of uric acid placed upon the filter.

A simpler and surer way of estimating the degree of proneness of the urine to deposit uric acid, is to keep specimens of the twenty-four hours' urine in corked bottles, in a warm place to guard against the deposition of amorphous urates, and with the addition of a few drops of chloroform to prevent decomposition. If the urine is acid, and is not very poor in uric acid, crystals of this will eventually be deposited, and the time at which these appear indicates the proneness of the urine to this deposition. If crystals habitually appear in the course of two or three hours the existence of the uric acid diathesis is indicated. If, on the other hand, the deposition only commences after twelve or twenty-four hours, the observation has no pathological significance.

Winckel's Disease.

An endemic of acute hæmoglobinuria in newly born children was observed by Winckel, at Dresden, in 1879, the symptoms being cyanosis, icterus, hemorrhages from various organs, dark-red discoloration of the renal pyramids, which contained streaks of hæmoglobin, and fatty degeneration of the liver and other organs. Nineteen of the children died on an average within thirty-two hours after the beginning of the symptoms. A few other cases have been reported by various observers, the last one being that recently carefully studied by Hirst (*University Medical Magazine*, March, 1890), which occurred in the maternity pavilion of the University Hospital, Philadelphia. Labor was induced in the mother of the patient sixteen days before term, but was normal in other respects. The child, a female, appeared well developed, and was not asphyxiated. On the following day blisters were

found on the legs and buttocks, probably the result of burning by hot-water cans. On the day succeeding this the body presented a brownish-green color, evidently a combination of cyanosis and icterus. The urine was of a dark-brown color, and contained methæmoglobin. Inhalations of oxygen relieved the cynosis to a considerable extent, but on the fifth day the child died. Temperature was normal until the fourth day, when the thermometer registered 102° F. On the examination of the blood the red cells numbered 5,700,000. Three days later they equalled 3,400,000, the ratio of white to red being 1 : 13.5, and the hæmoglobin eighty-nine per cent. Poikilocytosis was well marked. Bacteriological studies of the blood revealed the presence of a micrococcus.

At the post-mortem examination the body was found emaciated, and with an icteric hue of the skin and mucous membranes. Several dark, gangrenous-looking patches were seen, said to be the result of the contact of hot-water bottles. The lungs exhibited a large number of hemorrhagic infarcts of different sizes. The heart contained dark, fluid blood, and its muscle was somewhat degenerated. The cord and umbilicus were normal, as were the intestines and stomach. The liver seemed somewhat altered. The kidneys were cyanosed and injected. The mucous membrane of the bladder showed a number of pin-point foci of ecchymosis. The spleen was large and congested. The mesenteric glands enlarged and hard.

Microscopic examination showed cocci in the liver, kidneys, spleen, and lungs. There was some fatty degeneration of the heart muscle, and in the kidneys there was globular nephritis.

Leukæmia.

V. Mayer (quoted in *Centralblatt f. klin. Med.*, 1890, No. 1, 21) reports 21 cases of leukæmia, on 6 of which autopsies were made. 10 of them were females, 11 males. Most of the patients were between twenty and thirty years of age. The youngest was one and a quarter years, and the oldest sixty-nine years of age,

The majority belonged to the laboring class; from which circumstance the author concludes that unfavorable social conditions and bodily over-exertion are important etiologic factors. In women disorders of the sexual apparatus appear to exert some influence. All the cases were mixed forms, though the splenic form predominated. Implication of the bone marrow could in no case be established during life, in spite of some pain over the sternum and tibia. At the autopsies involvement of the marrow of the femur and of the bodies of the vertebræ was discovered in 2 cases. The enlargement of the spleen was, as a rule, huge, and in one case the tumor could be reached from the vagina. In 9 cases violent pain was caused by palpating the spleen.

The hemorrhagic diathesis was a very prominent symptom in the cases; there having been hemorrhage from the nose, intestine, and uterus; parenchymatous hemorrhage into the tissues and in the bones; and retinal hemorrhages. Fever of an irregular type was at times present. The increase of the number of white blood cells was comparatively slight in 4 cases (1 : 19 to 1 : 40). In the remaining the number was enormously increased (1 : 2.5).

Considering the fact that all the patients came under treatment in a com-

paratively advanced stage of the disease the therapeutic results were tolerably good. Quinine, iron, and Fowler's solution were chiefly employed. By their use, combined with good nourishment, 10 cases exhibited an evident, and even a considerable improvement; the condition of the blood also being improved.

Leukæmia Acutissima and Centripetal Venous Pulse.

Senator (*Münch. med. Wochenschr.*, January 21, 1890) reports the case of a woman of forty-five years who had always been well, except for rather profuse bleeding during labor and at her menses, and who was admitted to the hospital for prolapse. She was found to be exceedingly pale, to have decided remitting fever, and the usual symptoms of aortic insufficiency, together with a centripetal venous pulsation, developing shortly before death, and seen in the medium-sized veins of the back of the hand, and disappearing on pressure on the distal portion of the vein. At the first the anomaly in the blood was rather striking, but the second examination, made four days later, revealed an unusually severe case of leukæmia. At the autopsy aortic insufficiency, the result of ulcerative endocarditis, interstitial nephritis, and leukæmia, were found. Albumen had never been observed in the urine.

Senator comments on the rarity of such cases of rapidly developing leukæmia, and says that one of the most remarkable was observed by him in twins, in both of whom pseudo-leukæmia first appeared, which within two months turned into leukæmia. He has not, however, seen so rapid a case as the one now reported. The cause he believes to have been the frequent losses of blood.

With regard to the venous pulse, he considers that this condition is to be explained by the diminished elasticity of the walls of the arteries, always present in aortic insufficiency, combined with a relaxation of the muscular tone of the vessels, which permits the blood to enter the veins in waves instead of in a constant even stream. This is especially apt to happen under the influence of a hypertrophied ventricle.

The venous pulse must be carefully distinguished from the so-called "communicated" pulse, as he has seen it in three instances in phthisis with fever. In these cases the veins of the skin were overfilled, the skin relaxed, and the heart laboring forcibly as the result of the irritation of the fever and the carbonic acid intoxication. The arteries therefore pulsated violently, and easily communicated their motion to the veins.

Inflammatory Leucocytosis.

Limbeck (*Münch. med. Wochenschr.*, January 14, 1890) has studied the changes in the blood in a large number of cases of different febrile conditions. He found the number of white blood cells in man to equal physiologically 8000 to 9000 in the cubic millimetre; which in comparison with 5,000,000 red cells makes a ratio of 1 : 625–555. As a rule the number of leucocytes is increased by the ingestion of food, and diminished by hunger. With these physiological bases the author examined the condition of the blood in a large number of febrile patients. He found an inflammatory leucocytosis only in

those in which there was exudation somewhere in the body, as in pleurisy, erysipelas, meningitis, peritonitis, and polyarthritis, and that the greater the exudation, the more intense the leucocytosis. On the other hand, infectious diseases in which there was no exudation, as sepsis, intermittent and typhoid fevers, exhibited no leucocytosis. In the latter disease there even seemed to be a diminution in the number of leucocytes. He remarks upon the frequent combination of inflammatory leucocytosis and peptonuria. The presence of leucocytosis he would make a means of differential diagnosis between typhoid fever and infectious diseases which are attended by exudations.

Congestive Venous Diathesis and General Venous Congestion.

Cuffer and Sollier (*La Sem. Med.*, 1890, Nos. 1, 8) report two cases, occurring respectively in a man of sixty years, and a woman of forty-nine, in which there appeared an aggregation of symptoms of venous congestion, both of the superficial and deeper tissues of the body. There were present, for example, vesicular and erythematous eruptions, conjunctivitis, gingivitis, coryza, hypertrophy of the liver and spleen, albuminuria, catarrh of the lungs with sanguinolent expectoration, abdominal pain and vomiting, hæmatemesis, and diarrhœa. In addition to these there were various nervous symptoms, apparently due to vasomotor, medullary, and cerebral congestion. Neither of the patients had any family or personal history which could account for the disorder in any other way. An old disposition to hæmorrhoids and epistaxis, well shown in one, at least, of the cases; as well as the uselessness of all the therapeutic measures employed, except the derivative treatment with aloes, which brought back the hæmorrhoids, leads the authors to believe in the presence of a congenital predisposition; a primitive affection of the venous radicles. It is possible that this congestive venous diathesis might terminate in cirrhosis of the liver, in nephritis, or by the production of infarcts in the kidneys, lungs, or elsewhere.

Disturbances of Sensibility and Ataxia.

Rumpf (*Deutsches Archiv f. klin. Med.*, xlvi. 35) refers to the view accepted by some writers, and especially by Leyden, that ataxia is of a sensory nature. Also to the investigations of Goldscheider, which proved that diminution of the power of sensory perception could be artificially induced, *e. g.*, by the faradic current. Goldscheider, however, claimed that this diminution produced ataxia, which Rumpf cannot admit. In order to throw some light, from a clinical point of view, upon the relation of ataxia to diminution of sensibility, it was necessary to find pathological cases in which there were such evidences of diminution as could be induced in healthy persons by artificial means, yet without any evidences of disturbances essentially connected with ataxia.

He first reports in full detail an interesting case in which there existed in the lower extremities diminution of cutaneous sensibility, including temperature sense, though there was no loss of the sense of the position of the limbs. In the hands and arms there was, in addition to paresis of sensibility in all its varieties, a decided diminution of the sense of the position, and of the

passive motion of the joints, combined with a diminution of the muscle sense. If Leyden, Goldscheider, Pick, and others are correct, this patient would have, of necessity, exhibited ataxia. Not a trace of incoördination was, however, to be found. Rumpf reports another case by way of contrast to this, in which the same condition of the hands was present, accompanied in this instance by extreme incoördination. He briefly details two other cases, in both of which the same condition of diminished sensation without ataxia existed.

It was now an important matter to determine in how far the eyes could be employed to take the place of the lost perception of sensations described. For this purpose the nature of the handwriting was a useful test. Specimens of handwriting which the author depicts, show that in normal men there is no essential difference in it, whether the eyes are open or shut. In the case of the first patient described, however, the handwriting made while the eyes were closed was decidedly larger than that made when the eyes were open. The same difference was observed in the author's own handwriting when the sensibility was diminished by the passage of a faradic current, and the eyes were meantime kept shut. There was no evidence of ataxia in the writing in either case.

The same condition should appear in the writing of patients with ataxia; and the author exhibits specimens which prove that when there are no such affections of sensation as described, closing of the eyes does not alter the characters of the letters; but that when such symptoms exist, the letters become larger. Another case reported indicates that the alteration of the size in the writing has nothing whatever to do with the ataxia, since in this instance, though there was great ataxia, there was but slight diminution of sensation in the hands, and but the slightest increase in the size of the letters when the eyes were shut.

In endeavoring to draw from these observations some conclusions regarding the relation of sensation to movements and to the handwriting, he states his belief that the exercise of movements depends upon two centres, probably widely separated in the brain. One of these receives the imprint of sensations received by the skin, muscles, and joints, and on the other are impressed the pictures of motions received by the eye. A motor innervation can come from either centre, but to permit of this the knowledge of the position of the part at the moment of innervation is necessary. This knowledge can come either through the centre for sensation, or by way of the eyes, so that the inactivity of one centre is covered by the other. If neither centre operates (paralysis of the centre of sensation, and closure of the eyes) a more or less complete paralysis must result. For a movement which has been well practised under the double control, only the initial knowledge is necessary. In the event of the deficiency of one centre, the reflex movements are best performed; *i. e.*, those which have been so practised that an especial innervation is not needed after the motion is once set going. More difficult to perform are those which are always done under the control of the eyes, such as writing; with these it is necessary that the place and position of the part to be moved shall be known, and also that there shall be consciousness of each individual innervation. If there is a diminution of the perception of movements in the skin, muscles, joints, etc., the decidedly greater motion on closing the eyes will

indicate the consummation of the innervations; but this enlargement of the movements is uniform and not ataxic. Ataxia is, it is true, often *accompanied* by the disturbances of sensation referred to, and is not uninfluenced by them. If the influence of the eyes is removed by shutting them, the letters of the handwriting become larger in proportion to the degree of diminution in the perception of sensations.

Ataxia, if present, is also made more evident because the interruptions in uniform movements, which constitute it, are magnified in a way exactly similar to the magnifying of the movements themselves. If the paralysis of sensation is of very great degree, the absence, when the eyes are shut, of knowledge of the initial position of the part to be moved, may render the performance of a movement entirely impossible. And since many movements are composed of accomplished single innervations, the knowledge when the eyes are shut of the initial position will be required very frequently; and with the reduction of this knowledge, a varying innervation extending over a prolonged time becomes worse and worse. Moreover, with the closure of the eyes the power to restrain excessive movements is removed.

These remarks apply especially to the ataxia of the arms. As regards the gait, this is a movement so much practised that only the knowledge of one position at the commencement of the process is necessary. After the single innervation given at this time, the motion goes on uniformly unless some obstruction operates, such as excessive ataxia, or some inhibitory action on the part of the brain.

The Treatment of Phthisis with the Emulsion of Peru Balsam.

Opitz (quoted in *Wien. med. Presse*, 1889, No. 50, 1982) has been induced by the writings of Landerer on the subject to employ the balsam of Peru in the treatment of phthisis. He has not, however, used the diluted emulsion, and by intra-venous injection, as Landerer did. The preparation which he employed consists of 15 grains of gum Arabic dissolved in a half drachm of water, and then rubbed up with 30 grains of Peru balsam, and sufficient of 0.75 per cent. chloride of sodium solution to make ℥ij ♏xl. The emulsion is then neutralized with bicarbonate of sodium and sterilized by exposure for an hour to a temperature of 230° F. The preparation was used by subcutaneous injection, the point of election being the first or second intercostal space in the parasternal line. The most careful antiseptic precautions were employed. The injections were given twice a week. They were always painful, but produced abscesses in no case. No other treatment, except the purely symptomatic, was employed in the cases under consideration.

In three cases in which no extended destruction of pulmonary tissue had yet taken place, the removal of all catarrhal symptoms followed treatment lasting for four or five weeks, and sputum containing bacilli ceased to be present. After several months of treatment no pulmonary symptoms remained except the evidences of a cicatrix. There was also a great increase in weight.

In five cases in which large cavities had already commenced to form in the lungs, no marked alteration in the objective pulmonary symptoms could be detected, but a diminution of cough and of expectoration accompanied improvement in the general condition. In the first weeks of treatment there

occurred a decided loss of weight, but with the seventh or eighth week an increase in weight commenced, which soon much overbalanced the previous loss.

Another group of cases included those in which the terminal stage of the disease had been reached, and in these there was naturally no improvement.

The Treatment of Cholelithiasis.

S. Rosenberg (*Berl. klin. Wochenschr.*, December 9, 1889) collects 21 cases of cholelithiasis treated with olive oil; in only 2 of which was the result doubtful, while in his other 19 improvement or recovery was observed. Although doubtless many cases in which no improvement has taken place have simply not been published, yet the number of those benefited justifies the discussion of the manner in which the oil acts, and its value compared with other methods of treatment of biliary colics. Alkalies and alkaline mineral waters have long held a prominent place in the treatment of gall-stones. Neither they nor any other drugs have any solvent power on the biliary concretions; it is even doubtful whether they possess any cholagogue action. The author quotes several of the contradictory opinions regarding the action of the carbonate and bicarbonate, the sulphate and phosphate of soda, and the natural and artificial Karlsbad water. This uncertainty has fostered the opinion which has been expressed, that it is not the alkali, but solely the water holding it in solution which exerts a cholagogue action. Water, and especially warm water, has undoubtedly the power to increase the amount and diminish the consistency of the bile. The author believes it certain that of all the cholagogues there is none whose action is so inconstant and so insignificant as that of the alkalies.

Another method of treatment, proposed by Durande, is the administration of a mixture of turpentine and ether. Regarding this, too, there have been most contradictory views expressed. Rosenberg's own experiments led him to the conclusion that ether has no cholagogue power, but that turpentine increases the amount of the bile, and diminishes its consistence. Nevertheless, in doses sufficient to accomplish this it produces so great gastric disturbance that its employment is to be discountenanced.

One of the most energetic substances for increasing the flow of bile is the bile itself. Unfortunately its administration greatly increases the biliary consistence also; so that, instead of helping to wash out the concretions, there is danger of aiding their growth. The salicylate of soda is a drug which all observers unite in considering a very efficient cholagogue, as it both augments and thins the bile. The author has had excellent clinical results with it in several cases.

Olive oil in large doses acts in much the same way as the salicylate of soda, but much more powerfully. Most experiments tend to prove that the action of oil cannot be due to any power on its part to penetrate from the duodenum into the gall-bladder, and there to soften the stones. The author's own view, confirmed by his experiments, is that in order to digest the large quantities of oil or fat in the intestine, there occurs a great increase in the secretion of bile, and a consequent dilution of it; and that this increase is far greater than that produced by either the administration of bile or of salicylate of soda.

This augmented secretion may either entirely wash the stones out of the bladder, or at least dislodge them from the position in which they obstruct the discharge of bile into the duodenum. If, now, olive oil has really so powerful an influence on the biliary secretion, we would expect that in countries where much of it is regularly ingested choleliathiasis would occur but seldom. And, in fact, according to a personal communication from Cantani, the disease is not very common in Italy.

Unfortunately, the employment of oil is interfered with to a large extent by the intolerance which many stomachs possess for it. It is, therefore, better to begin the treatment of any case with the employment of the milder cholagogues, especially the salicylate of soda. If this drug fails to give relief, there should be no delay in beginning the treatment with oil. It is advisable to disguise the nature of the drug by the addition of cognac, menthol, and yolk of egg. Failures with this plan of treatment will, doubtless, not be rare; at the same time many of these apparent failures will be due to errors in diagnosis, the symptoms being in reality due to a carcinoma, or to the presence of echinococci, etc. In other cases of true cholelithiasis the condition may be such that nothing short of operative interference can give relief. If treatment succeeds in removing the stones, care must be taken that there is no formation of fresh ones. This is to be prevented by avoiding a condensation of bile, and by removing catarrh of the bile-ducts. The first may be accomplished by the administration, for a long time, of small doses of salicylate of soda, and of oil and fat in the form of oily salads, sardines, etc. The catarrh can be well treated by alkalies and the alkaline mineral waters, which are of more value for this purpose than in the removal of the stones.

Diagnosis and Treatment of Aneurism of the Aorta.

Powell (*Lancet*, January 4, 1890) says that though pathologically aneurisms are still divided into the fusiform and sacculated forms, *clinically* the phenomena characteristic of aneurism are scarcely ever observed except in the latter variety. It would be a fatal mistake to treat the fusiform aneurism—"false aneurism," from a clinical point of view—according to the methods which are indicated in the case of the true sacculated aneurism. The fusiform dilatations usually occupy the first portion of the aorta, seldom produce pressure symptoms, have no tendency to rupture, are usually associated with valvular lesions of the heart, and demand the treatment appropriate to heart diseases.

The essential phenomena of sacculated aneurism are primarily those derived from the pressure of a tumor on surrounding parts, and secondarily those indicating that it is a vessel-tumor. The author relates several cases illustrative of the importance of laying the greater weight on the presence of signs of pressure, rather than on such symptoms as bruit, thrill, and the like. According to his experience, about one-half of the cases of sacculated aneurism are without any murmur, and many of these never develop any to the end of the case. A systolic murmur, heard over an area remote from the heart, such as the dorsal or supra-spinous regions, is, however, of great diagnostic value, but not positively convincing, as morbid growths may sometimes

produce the same symptom. A diastolic murmur is rarer, but is absolute proof of intra-arterial disease. Thrill is a comparatively rare sign, while it is common in spurious cases. It, with loud systolic and sometimes diastolic murmur, generally accompanies marked fusiform dilatation of the ascending aorta. But the situation of the signs near the aortic orifice, and the absence of pressure signs, will generally distinguish the condition from true sacculated aneurism.

The author includes in his paper the following valuable tabular arrangement of the "pressure signs of aneurism":

Pressure on parietes causes	Local pain.	
	Local tumor (pulsation).	
	Absorption of tissues.	
Pressure on nerve causes	Radiating neuralgic pains.	Unequal pupils, paralysis of vocal cords.
	Paralysis.	Hemiplegia or paraplegia.
	Asthmatic dyspnœa.	
Pressure on vessels causes	Inequality of pulses.	Local œdemas.
	Obstruction of veins.	Enlarged collateral veins.
Pressure on air-tubes causes	Tracheal signs.	Paroxysmal dyspnœa.
		Brassy cough.
		Bilateral stridor.
	Bronchial signs.	Also paroxysmal dyspnœa and cough.
		Unilateral stridor.
		Filling and consolidation of the lung behind.
Pressure on œsophagus causes	Dysphagia.	
Pressure on lung causes	Consolidation, displacement.	

He refers to the difficulty in diagnosing aortic aneurisms which present toward the spinal column; the evidence gained from auscultation being in this case chiefly to be relied on to determine the cause of the pressure symptoms. He recommends that a stiff stethoscope be employed, because it will transmit the sensation of delicate impulses imperceptible to the hand, and especially the peculiar jog or shock synchronous with the second sound. This symptom is absolutely diagnostic of sacculated aneurism, and cannot be detected with the flexible stethoscope.

The author has sometimes based his diagnosis on its presence alone. It is often observed in obscure cases, in which there is no other auscultatory sign, and perhaps no impulse; and it differentiates such cases absolutely from those of solid tumor, which they closely resemble. For the production of the sign it is necessary that the aortic valves be competent, or nearly so.

Auscultatory evidence of murmur is of little importance in aneurism, unless the sound be heard over the spinous region behind, where it becomes of the greatest diagnostic value. Fixed pain in the back in the aortic region should always arouse suspicion.

The laryngoscope is sometimes a great aid to diagnosis, but its use will sometimes produce distressing laryngeal spasm.

The most rational and scientific treatment of sacculated aneurisms is that recommended by Tuffnell; consisting of absolute rest, with very restricted

food and fluid. It is, however, very severe. It is best adapted to—1, abdominal aneurisms; 2, cases in which a small sac is pressing upon nerves or tubes; 3, larger aneurisms threatening to penetrate the parietes. In general, the more sacculated the aneurism and the more widely separated from the aortic valves, the better suited is it for this plan of treatment.

The author has also largely employed iodide of potash in full doses, and believes that he has seen it effect good in the first stages of Tufnell's treatment.

Ligature of the carotid artery is only open for consideration in aneurism of the first or second portion of the arch, and so placed that the blood current through it is influenced to some degree by that through the carotid on one or the other side. Medical means should always be tried first.

Powell is opposed to galvano-puncture and to the introduction into the aneurism of foreign substances, such as iron wire or horsehair. He thinks the methods are wrong in principle, and also not without danger.

Gastric Digestion in Heart Diseases.

In an article abstracted in this journal some time ago, Hufler took the ground, as the result of his own observations, that in all cardiac diseases, whether of the muscle or of the valves, the resulting passive congestion weakened or even abolished the ability of the stomach to produce acid. In these studies he employed the test-meal of Leube, which consists of a large quantity of meat, and removed some of the contents of the stomach after two hours and again after six hours. As the number of cases on which the experiments were made was small, Adler and Stern (*Berliner klin. Wochenschrift*, 1889, No. 49, 1060) have conducted a series of investigations on the same subject. For this purpose they chose 20 typical cases of heart disease, in most of which the examination of the gastric contents was made several times. Each patient received the trial-breakfast of Ewald, consisting of 35 grammes of bread and a glass of water, and this was removed by the sound after one hour. Congo paper and the Günzburg reaction were employed to determine the presence of free hydrochloric acid, the latter being looked upon as decisive. The presence of lactic acid was determined by Uffelmann's reagent. Whenever the quantity of the gastric contents was large enough, the total acidity was determined by neutralization with a normal soda solution. The determination of the peptic strength was not considered important, since this always goes hand-in-hand with the presence of free hydrochloric acid. In about half of the cases the motor sufficiency of the stomach was tested by Ewald's salol method.

The authors give a tabular arrangement of the results obtained, showing that 16 of the 20 cases always had free acid. These results are directly contradictory to those of Hufler. This difference is to be explained on the ground that the time at which the color reaction can be obtained depends largely on the quantity of food ingested at the trial-meal; for it is evident that the albuminous elements of the food must first enter into their combinations with hydrochloric acid before free acid can be found in the contents of the stomach. The length of time required after the abundant Leube's meal is, therefore, three to six times as great as after the lighter Ewald's breakfast. Even, too, with like amounts of food, there may be, in

different healthy individuals, a difference in the rapidity with which the acid appears in the stomach, although, perhaps, the total amount secreted is the same. In order to still more carefully investigate the matter, the authors followed Hufler's plan exactly in 13 of the 20 cases of heart disease, and in 10 individuals with healthy stomachs. It was found that in the majority of them no free acid could be detected after two hours, but that it was present after four to five hours.

The authors, therefore, reach the conclusion that the results obtained from the examination of the gastric contents of patients with heart disease do not differ essentially from those obtained in the case of persons with healthy stomachs. Any subjective complaints referred to the stomach in these patients are probably to be referred to some central cause rather than to any disturbance of the gastric secretion.

SURGERY.

UNDER THE CHARGE OF

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Surgery of Infancy and Childhood.

The *British Medical Journal* (January 11, 1890) condenses as follows the exceedingly interesting Lettsomian lecture on the above subject recently delivered by Mr. Edmund Owen. Beginning with the treatment of enlarged glands of the neck, he remarked that the presence of branching scars implied a blame either of the parents for not seeking advice in good time, or of the medical attendant for not availing himself of the means at his disposal to effect a cure without waiting for suppuration and consequent loss of tissue. He urged that instead of painting the skin over the glands with iodine or iodide of lead, the duty of the surgeon was to remove the enlarged glands without loss of time and before the patient had been exposed to the risk of the adjacent glands becoming enlarged and the organism exposed to the danger of septic absorption.

He then took up the question of causation, and pointed to the pharynx and tonsils as being likely sites for the entrance of septic poisons into the system. After alluding to the advantages attending constitutional treatment, change of air, etc., in enlargement of the glands for which no existing cause could be made out, the lecturer cautioned his listeners that perfect success could not be guaranteed in every case, or even in most cases, as a result of a first and single operation; but he claimed, however, that the removal of as much as possible of the diseased tissue was always attended with marked benefit to the patient's general health and a period of arrest, if nothing more, in the further progress of the malady. He then proceeded to describe the technique of the operation: He makes an incision along the anterior border of the

sterno-mastoid, over the tumor, of sufficient size to allow of the necessary manipulations, extending through the skin and down to the deep fascia, completing the laying bare of the glands by means of a steel director and forceps. Vessels are torn through with the forceps so as to prevent unnecessary hemorrhage, until the only connections of the gland are the lymphatic vessels above and below. The enlarged glands are then removed without difficulty, the cavity which remains being washed out with a mercurial solution and dried, the edges being brought together by means of sterilized horsehair sutures, and a small drainage-tube inserted.

To prevent any scars as the result of the sutures, these are removed not later than the second or third day. A strip of moist protective is placed over the wound, surmounted by a pad of cotton-wool, and the patient is placed in bed, the head and neck being steadied with sandbags and perfect immobility maintained. The next day the dressing is removed, and the drainage-tube and possibly the sutures removed, the edges being approximated by strips of waterproof strapping. The child is kept recumbent as long as possible, and when allowed to get up the neck is kept at rest by means of a stock of thick buckram covered with linen.

If, on making the incision, a suppurating cavity is found, the lecturer advocated laying the cavity well open, cleaning it out thoroughly, and making due provision for drainage.

In a few cases it has been found necessary to divide the attachment of the sterno-mastoid muscle in order effectually to deal with the enlargements beneath it. He insisted upon the fact that the progress effected in the surgical treatment of enlarged glands in this situation was mainly due to Mr. Pridgin Teale.

The lecturer narrated a case in which he had operated upon a child for a sarcomatous gland of the neck, and pointed out that in certain cases no treatment short of extensive operation could possibly prove of avail, and although the shock attending such an operation might be sufficient of itself to determine a fatal result, yet, as the alternative was inevitable death, he urged that the most serious risk should unhesitatingly be accepted, and the operation undertaken.

The lecturer passed on to discuss congenital cystic hygromata. He was of the opinion that they were best left alone, or, at the most, tapped, as they rarely caused serious symptoms, and proved very troublesome things to deal with if operated upon. He mentioned that although he had seen dozens of these dilated lymph spaces in infants and children, he had never met with them past the age of puberty. He inferred, therefore, that absorption invariably took place, preceded or not by inflammation.

He showed drawings and photographs of several cases of this kind illustrating their principal clinical features. He pointed out that the tumor of hygroma was altogether different from "hydrocele of the neck," due to non-closure of one of the branchial clefts with subsequent distention of the cavity. Thus created, it differed in having a definite rounded contour, and of consisting of a single cyst, which, on evacuation, left the neck its normal shape.

Such tumors were, he said, easily cured by incision and drainage. He concluded by alluding to the experiments of Horsley and others bearing on the effects of the removal of the thyroid gland in connection with cases of

sporadic cretinism, and urged that in these days of active, restless, and aggressive surgery control experiments upon living animals were not only justifiable, but necessary.

The Antiseptic Value of Iodoform.

Mr. A. Ernest Maylard (*The Annals of Surgery*, January, 1890) reports two careful series of experiments undertaken with the object of corroborating or overturning the results arrived at by Korsing and Heyer. The first series were with anthrax spores and anthrax bacilli, and showed that the effect of adding iodoform to the cultures was to retard growth but not to prevent it, as in all cases rapid and continuous development sooner or later took place. In these experiments with anthrax bacilli his results confirmed those previously arrived at by Neisser and Buchner. The experiments with micrococcus prodigiosus show also that the presence of iodoform in the cultures has a retarding effect, and further, that this retardation may in many cases be due to the purely mechanical effect of the iodoform separating the microbe from its soil. Especially would this seem to be the case where iodoform has been previously dusted upon the surface of the medium which is to have implanted upon it the microbe.

In no case was growth entirely inhibited. The experiments with staphylococcus pyogenes aureus showed that the addition of iodoform, either to the microbes themselves, or to the soil upon which they were to be implanted, had the effect of retarding growth; but in no case did the microbes appear to be deleteriously affected. These experiments with staphylococcus pyogenes aureus do not agree in their results with those obtained by Neisser, who states that in his experiments with this microbe iodoform in no way affected its growth.

The second series of experiments were made with pus from acute abscesses and from non-tuberculous ulcerating surfaces. These experiments would seem to prove that under certain conditions iodoform has a germicidal effect upon pyogenic microbes, and no influence upon one putrefactive microbe—bacterium termo; that the only conditions which allow of this effect are the existence in large excess of iodoform or the presence in comparatively small numbers of the microbes. Where the microbes are in abundance, some retarding influence appears to be exercised by iodoform upon their growth, and even some diminution in the numbers which subsequently develop; but if the number present be so large that the pus may approach to the condition resembling "pus cultivation" of the microbe, then the experiment resembles those of the first series and the result the same—*i. e.*, no germicidal effect is produced.

The general result, then, of this second series of experiments is to show that iodoform has some distinctive power, and that its supposed or acknowledged value in the wards is borne out by experiments in the laboratory. It may fairly be assumed that where iodoform is added to a wound it will be largely in excess of any microbes present, and therefore precisely in the position in which the experiments seem to indicate its aseptic power lies. Indeed, it is quite probable that such conditions as existed in the first series of experiments are rarely found to exist naturally; that is to say, no open

wound is ever in the position of having anything comparable to a pure cultivation of microbes upon its surface. So that, practically, iodoform, when used clinically, is always applied largely in excess of existing microbes, and therefore capable of exercising advantageously its antiseptic properties.

Mr. Maylard believes that his experiments prove that iodoform has a distinct effect upon the microbes themselves, but such effect is only produced when the drug is largely in excess of the organisms. Surgeons who use iodoform with any real faith in its antiseptic properties do so in large quantities, as it is only the proper use of the drug which brings about the good results that occur.

As compared with many other much more powerful antiseptics, the special value of iodoform must rest upon its prolonged action. Solutions are absorbed or carried away by the discharge, whereas iodoform remains as an almost permanent application. So that it is not infrequent to find, on the removal of a dressing some weeks after its original application, the iodoform still on the wound, and as active—if the pungency of the odor may be accepted as a criterion of the continuance of its antiseptic power—as when first used.

Primary Sarcoma of the Tonsil.

Dr. J. William White (*University Medical Magazine*, January, 1890) reports the case of a man, fifty-five years of age, with a large cauliflower excrescence nearly filling the pharynx and arising from the right tonsil. It was giving rise to considerable difficulty in swallowing, and was producing a moderate degree of pain by pressure. Operation was advised and consented to, and was performed as follows: The patient being etherized, a preliminary laryngotomy was made, the laryngeal tube was put in place, and the etherization continued through it; the pharynx was plugged tightly with strips of iodoform gauze; the cheek was split from the corner of the mouth to the anterior edge of the masseter muscle, and the growth enucleated by means of catch-forceps and the finger. The pharynx having been thoroughly cleaned out and a portion of the anterior half arch, which had been infiltrated, having been removed with the scissors, the wound in the cheek was united by means of harelip pins, and the packing removed from the pharynx. The patient made a rapid and uninterrupted recovery. The laryngeal tube was taken out the following day. His temperature never reached 100°. The wound in the cheek at the end of three weeks—the time of discharge—was barely perceptible, and the patient went home apparently cured.

Growths of the tonsil of this character are rare, except as a secondary result of sarcomatous disease elsewhere. It is also rare to see such patients before there is any infiltration of surrounding structures or any glandular involvement, although, of course, the latter complication is longer in making its appearance in cases of sarcoma than in other forms of malignant disease.

Extirpation of the Isthmus of the Thyroid in Goitre.

Julius Wolff (*Berliner klinische Wochenschrift*, November 14, 1889) is of the opinion that a reciprocal relation exists between the growth of goitre and the degree of compression of the windpipe. The goitre produces stenosis of

the trachea, and this again causes a swelling of the tumor. It is therefore sufficient in an operation for goitre to free one aspect of the trachea and remove just so much of the goitre that the remainder cannot lie directly on the trachea. On this principle Wolff has operated in two cases, both of which were successful. In one case the goitre produced great difficulty in respiration. A portion (one and one-fifth inches wide) was removed from the middle of the right half of the goitre, October, 1888. In March, 1890, nothing was to be seen of the left half of the goitre; on the right there was still a swelling as large as a walnut, although directly after the operation this portion of the goitre had been the size of an apple. The disturbance of respiration had disappeared. On the right side paresis of the recurrent laryngeal had existed before the operation, and on the left side there had been considerable incurvation of the trachea: both of these symptoms were considerably improved.

Symptoms and Conditions which Justify Nephro-lithotomy.

Mr. W. H. A. Jacobson, under the above head considers (*The British Medical Journal*, January 14, 1890) in considerable detail the following symptoms: 1. Continued hematuria, or passage of blood and pus. 2. Pain or tenderness in the loin or elsewhere. 3. Points connected with the previous history—for example, family history, habitat, habits, lithiasis, oxaluria, passage of previous stones, renal colic. 4. Frequency of micturition. 5. Absence of any condition in the rest of the urino-genital tract to explain the symptoms (Morris). 6. Failure of previous treatment.

The chief conditions simulating renal caculus he believes to be: (1) lithiasis and, to a less degree, oxaluria; (2) tubercular kidney; (3) pyelitis, not tubercular; (4) movable and (5) aching kidney, especially if associated with (6) neuralgic conditions; (7) disease in organs contiguous to the kidney; (8) disease of lumbar spine; (9) interstitial shrinking nephritis; (10) malignant disease of the kidney, especially of its pelvis, and malignant disease around last dorsal nerve.

The most important practical points in the performance of nephro-lithotomy he sums up as follows:

1. To count the ribs. That this is not an unimportant detail is proved by the fact that Professor Dumreicher, of Vienna, accidentally opened the pleural cavity in an attempt to remove a pyelo-nephrotic calculous kidney. Post-mortem the last rib was found to be rudimentary, and the pleura projected a good deal below the lower edge of the eleventh rib.

2. To make a sufficiently free incision, especially in a stout patient and a deep loin. Additional room may be gained by converting the usual lumbar incision into a T-shaped one, or by making use of Kœnig's incision, in which the muscles are cut through as far as the rectus, and the peritoneum pushed forward. A small stone in a kidney will always be liable to be overlooked, but a surgeon does not give his patient or himself a fair chance who is content with exposing the kidney through a limited incision, and then trusting to punctures with a needle.

3. To pack away with sponges the colon, which is often troublesomely distended with flatus in these cases.

4. If the stone cannot be felt either in the pelvis or after palpation of the posterior and anterior surfaces of the kidney, this should be drawn up and out of the wound as far as possible and again examined, a careful watch being kept upon the pulse.

5. In puncturing the kidney, to try, as far as possible, to open the calyces systematically.

6. If palpation and acupuncture fail to find a stone, the kidney should be carefully opened and sounded. I will recur to the subject of hemorrhage shortly, and take first the best site of opening the kidney. Hitherto in five doubtful cases I have incised near the pelvis, as the viscus is thinner there, and as the surgeon can better reach the calyces.

7. Hemorrhage from an incision into the kidney is certainly arrested by firm, careful plugging with strips of sal alembroth gauze. On the five occasions on which I have used this plan I have removed the strips the next day with the aid of a few minutes' anæsthetic—gas sufficing for this. It is said that this plugging may cause vomiting. This did not occur in any of my cases. It ceases on the removal of the plugs. Care must be taken that the plugging is thoroughly done. If inadequate, it will have to be repeated in a few hours—perhaps more than once—thus leading to exhaustion and setting up cellulitis, which may of itself be fatal, owing to the important relations of the kidney.

8. Sources of difficulty in removing the stone. The chief of these are: (1) A very mobile kidney, which gets away deep in the wound; (2) a stone situated on the anterior surface and near the entrance of the vessels; (3) a small stone in a sacculated kidney, the stone falling into one of the sacculi, and thus being hard to find.

9. Multiple calculus in a suppurating damaged kidney. If the question of nephrectomy arise this step should, as a rule, be deferred, and the kidney thoroughly drained, for (1) additional shock and loss of blood will be avoided. (2) The condition of the opposite kidney, very possibly calculous also, will be made clearer by waiting. (3) The bulk of the kidney will be lessened by drainage. (4) Though a source of discomfort (if an open sinus persist) it may still do some and important work.

10. If the kidney has been much disturbed, it should be stitched *in situ*.

Lumbar versus Iliac Colotomy.

Mr. Thomas Bryant (*The Lancet*, December 14, 1889) sums up in the following series of propositions his views as to the advantages of lumbar over iliac colotomy:

1. For the iliac operation to be a success, the large bowel should not be loaded with feces, the abdomen be by no means tense, and the symptoms of obstruction far from urgent; since under opposite conditions (such as those too commonly met with) its supposed advantages would hardly be demonstrated. The searching for the bowel would, moreover, be a serious difficulty; the free manipulation, extrusion, or excision of the bowel which is advised would be unsafe, even if practicable, and the necessity of having to open the bowel upon its exposure would, when called for, add to the dangers of the measure. The iliac operation, consequently, would appear to be applicable to

only a small class of cases. If, then, it can be said that iliac colotomy is an easier operation than the lumbar, when the large bowel is empty, the abdomen flaccid, and the symptoms of obstruction unpronounced, it can without hesitation be asserted that with a distended abdomen and colon and urgent symptoms the lumbar operation is the simpler of the two.

2. To search for the colon in iliac colotomy performed upon a patient with an undistended abdomen and free from all urgent symptoms may neither be difficult nor dangerous; but with the opposite condition, in which the bowel is damaged above the immediate seat of disease from prolonged obstruction, danger must exist, and such a danger must be added to that which appertains to the peritoneal wound. In lumbar colotomy neither of these dangers has to be met; such searching for, extrusion, and dragging outward of the colon as is considered to be essential in the iliac operation is never requisite, since the spur which is considered to be so essential to guard against the passage of feces past the artificial opening in the iliac method can in the lumbar be obtained by far simpler means.

3. The prolapse of the bowel at the artificial opening which has been adduced as an objection against lumbar colotomy does not rightly or of necessity belong to it. To judge by Mr. Bryant's experience, it is imaginary. In the iliac operation the objection is admitted, and sought to be remedied by an operative measure which is in itself of far greater magnitude than any lumbar colotomy he has ever done or seen.

4. The fear of an abnormality of the colon rendering the operation of lumbar colotomy a failure is practically groundless.

5. The greater convenience of the iliac over the lumbar wound for toilet purposes may at first sight seem plausible, but this apparent advantage is more than counterbalanced by the greater difficulty that exists in keeping any dressing or compress in position over the anterior opening to prevent the escape of the intestinal contents than is ever experienced in the lumbar.

6. The final conclusion is, therefore, clear that iliac colotomy is not yet proved to be superior to the lumbar operation.

In doubtful cases, in which an exploratory incision is required for diagnostic purposes, it may be useful, but such cases are very few; in all others, lumbar colotomy has advantages which stamp it as the better measure. The single advantage that he can see in the adoption of the iliac method is that the question of operative interference will have to be taken into account at a far earlier period of the patient's trouble than it has hitherto been the custom to consider the propriety of the lumbar operation; if so, we may soon see the valuable operation of lumbar colotomy take its right place in the practice of surgery, and good may come out of a fashion which has certainly not been a universal success.

The Removal of an Enormous Encysted Vesical Calculus.

Dr. J. William White (*The Annals of Surgery*, January, 1890) reports the successful removal, from a man fifty-five years of age, of an encysted calculus weighing 4550 grains, and gives a brief review of the histories of similar cases, showing that very few stones as large have ever been successfully extracted. The chief points of interest in the case seem to be:

1. The absence of fatal kidney disease in a case of such long standing, and in the presence of such an extreme source of ureteral obstruction, frequent urination, etc.

2. The encysted condition of the calculus.

3. Its unusual size and weight.

Many cases have been recorded in which enormous calculi were found after death in the bladders of patients who died from intercurrent disease, or from conditions not directly involving or dependent upon the urinary tract. In the majority of instances, however, it is probable that when a stone attains a weight of more than two or three ounces, and is carried for any length of time, it produces a condition of the bladder and kidneys which, if not fatal in itself, strongly contra-indicates operative interference. The second point alluded to is the incarceration of the stone by means of such firmly organized lymph and by such a projection of the mucous membrane around about it, that it practically lay in a cavity of its own, communicating with the bladder by means of the aperture through which a portion of its convex surface protruded. The mode of formation of these cysts containing calculi is variable. In the majority of patients of the age of this one it has always seemed probable that the condition was brought about primarily by enlargement of the prostate, causing vesical hypertrophy with distention, and with the protrusion of the mucous membrane between the fibres of the detrusor, which gives rise to the well-known "sacculated bladder" of old people.

Dr. White makes the following remarks as to the diagnosis and operative treatment of such a calculus: A stone of this size and shape, freely movable in the bladder, could undoubtedly be seized by the lithotrite and measured in its small diameter, but it is hardly probable that it would be caught in the direction of its length in the one examination which it is customary to make for the purpose of measurement before deciding upon the particular operation to be performed. If the bladder was much contracted, it could not be grasped in its long diameter at all. The existence of a cyst-wall nearly covering it, greatly reducing the area over which the characteristic click of the searcher is obtained, preventing the lithotrite from seizing the stone with any firmness, and rendering it almost immobile, of course adds greatly to the difficulty of diagnosis. Bimanual examination, with a finger in the rectum and another over the hypogastrium, might be of use in persons with very attenuated abdominal walls; but even this would scarcely convey an accurate conception of the dimensions of the calculus. It is probable that the true size of such calculi will generally be discovered in the future, as in the past, during the performance of the operation intended for their removal.

As to the choice of that operation there can scarcely be two opinions—suprapubic cystotomy being so evidently the only available method, and the one to be employed at once when, as in this instance, the character of the stone is disclosed during the attempt at litholapaxy. It would, perhaps, be more useful to consider the duty of the surgeon who, having opened the perineum by either the median or lateral section, finds that he is dealing with a calculus of this description. Under these circumstances, the abandonment of the perineal route being imperative, the high operation should be performed, either at once, if the patient is in good condition and well fitted

to bear the shock, or, if that is thought inadvisable, as soon as the perineal wound has fairly well granulated, the patient then having the benefit of the drainage by that route without the danger of septic absorption.

Osteitis Deformans.

Dr. Georges Thibierge (*Archives Générales de Médecine*, January, 1890) in the course of an elaborate article on Paget's osteitis deformans, considers carefully the various theories as to the etiology of this disease and its relation to similar bone affections. He concludes that the essential cause of osteitis deformans is quite unknown, but its clinical history demonstrates that it is a disease of the osseous system, or rather a general disease, arising from a general nutritive disorder of indeterminate origin. In spite of this lack of accurate knowledge of the cause and intimate nature of the anatomical changes, the clinical characters of the disease are sufficient proof that it constitutes a distinct and individual type. This is demonstrated not only by the peculiar and constant reappearance of the lesions, and by the extraordinary deformity of the bones thus attacked, but also by the regular and progressive course of the symptoms, and, above all, by the remarkable frequency of the final occurrence of malignant tumors: all these facts justify us in considering it to constitute a special pathological type, a true morbid entity. Osteitis deformans should then, according to Dr. Thibierge, be classified as distinct from other affections of the osseous system. Although it may be impossible to be more definite while its essential nature is as yet undetermined, it is right not to place it in the heteroclitous group to which has been given the name "multiple hyperostoses," a name which describes a symptom, and not a disease.

Mitral Stenosis as a Result of Fracture of the Sternum.

Ritter (*Centralblatt für Chirurgie*, No. 52, 1889) reports the case of a workman, thirty-four years old, who, in February, 1889, was hit in the breast by a piece of wood, which caused a fracture of the sternum. During his stay in the hospital there was no acceleration of the pulse, and on his discharge, five weeks after, nothing abnormal was found with the heart. In July of the same year the man reappeared, showing a marked angular inflexion of the sternum in the region of the insertion of the fourth rib; the ensiform process was directed to the right and lay under the curve of the ribs. The heart extended upward to the upper edge of the fifth rib; toward the left it reached out to the parasternal line; toward the right, it extended a finger's breadth beyond the edge of the sternum; underneath, to the edge of the seventh rib. There were symptoms of mitral stenosis, which were evidently produced by this displacement of the heart, originating in the injury.

Blood Tumors of Bone.

Mr. Edward Roughton (*The Lancet*, December 14, 1889) recently read a paper before the Royal Medical and Chirurgical Society on the angeiomata and angeio-sarcomata of bone. His object was to elucidate the nature of

those tumors which were occasionally found in the interior of bones, and which on dissection were found to consist almost entirely of blood. These tumors had hitherto been considered to be always of a malignant nature. It was shown that, although some (perhaps most) of them were malignant, some were only semi-malignant, and others quite innocent in nature. This fact was illustrated by the following series of cases arranged in order of malignancy: 1. Max Oberst's case, a highly malignant endosteal sarcoma. 2. Dupuytren's case, arrested for seven years by tying the main artery of the limb. 3. Roux's case, permanently cured by tying the main artery. 4. Lagout's case, similar to the preceding. 5. The case of L. C. (detailed in the paper), in which the growth was arrested by simple incision. 6. MacDonnall's case, cured by the pressure of an elastic stocking. It was argued that these tumors consisted essentially of bloodvessels which, being imperfectly developed, were unable to contain blood, and so burst and destroyed the tissue in which they were contained. The author thought that these bloodvessels were developed from the myeloid cells of red bone-marrow, and that the more embryonic they were the more malignant was the tumor in which they were situated. In the innocent blood-tumor of bone, the vessels were more highly developed, but still too weak to contain blood.

When the vessels attained sufficient maturity to admit of no extravasation, the tumor ceased to have the characters of a blood-tumor, and was, in fact, a pure angeioma. Such tumors, although more common in other parts, had been several times met with in bones. With regard to the treatment of these tumors, it was suggested that they should be incised, and if found to contain little or no solid matter, allowed to granulate up. If after incision the tumor continued to grow, free removal of the diseased part should be practised.

In the discussion which followed, Dr. Maguire said that he had examined several cases of malignant tumor of bone, and three of these presented appearances of extreme vascularity and pulsation—so much so that they might be mistaken for aneurism. He had been able to trace the development of sarcomatous tissue from the muscle fibre of the arterial wall. The more malignant the tumor the more rapidly would it become vascular, and the more likely were the vessels to give way. The fact that sarcomatous tissue was often found only at the edge of the blood-tumor showed how difficult the diagnosis might be, and, therefore, it was unwise to trust to the information gained from a simple incision into these growths. The tumors were not confined to the endosteum, for one case he had observed was an extremely malignant instance of periosteal sarcoma which recurred later in the viscera. Mr. Holmes differed from the last speaker as to the value of incision, for he recommended cutting into the tumor, evacuating its contents, and then, if no obviously sarcomatous tissue were found, giving the patient the benefit of the doubt. The cases originally described by French writers as aneurism of bone, were really, he thought, cases of endosteal and periosteal sarcoma, and he did not know of any safe means of distinguishing between the two.

THE GRAFTING OF BONE AFTER EXTENSIVE LOSS OF OSSEOUS TISSUE.

M. PONCET (*Révue de Chirurgie*, November, 1889) reports the case of a child suffering with osteomyelitis of the inferior extremity of the right tibia and

with tibio-tarsal arthritis. After an incision at the level of the joint, he found a denudation of the tibia, which extended to within two centimetres of the knee. It was found that the diaphysis of the tibia was changed into a vast sequestrum bathed in pus. The articular cartilages were destroyed, as well as the periosteum in its lower third. The loss of substance was so great that from the osteogenic power of the periosteum alone reproduction of bone could scarcely be hoped for. The cavity was therefore allowed to begin to granulate, and then after previous curetting it was filled with little fragments of bone taken from a kid. Little by little the flabby granulations covered them and finally caused their disappearance. Six months after, the formation of a bony mass was clearly felt. The child could finally walk long distances without fatigue, his right leg giving him the same support as the left one. There existed a shortening estimated at 3½ inches, the healthy tibia measuring 14½ inches, the renewed tibia 11 inches; it then suffered a shrinking of ¾ of an inch, owing to the weight of the body, the patient having walked too soon; complete ankylosis of the tibia-tarsal joint resulted, but the foot being in good position the child can walk without limping—thanks to an orthopedic shoe. M. Poncet concludes that these fragmentary bony grafts can be of real service. Used in the midst of granulations, they play in some measure the *rôle* of rubble thrown in a concrete substance.

The Ligation of Varicose Veins of the Leg.

Dr. Charles Phelps in an interesting paper (*The New York Medical Journal*, December 28, 1889) gives the following directions for the ligature of varicose veins of the lower extremities:

In the ligation of varicose veins, as in all other operations, antiseptic methods and precautions in preparing the limb, in operating, and in dressing should be scrupulously observed. If, however, by neglect of these, some suppuration occurs, he has not found it to do serious harm beyond the trouble it occasions in multiplying dressings and detaining the patient in bed. The distance between the ligatures should vary in accordance with the size and varicosity of the vein and its apparent or probable anastomoses. In long stretches of large but comparatively straight veins the intervals should not be greater than from one to two inches.

Where there are masses of dilated and convoluted veins forming a tumor, it is impossible to include it in the ligatures, and they must be applied all around it and as closely as possible to it, embracing every immergent and emergent vein that can be discovered. He uses a catgut suture taken directly from the juniper oil and as small in size as possible consistent with necessary strength. The ligatures should be carried by a straight needle, preferably the Keyes-Reverdin, immediately behind the vein, and the needle unthreaded and withdrawn. The needle is then carried immediately in front of the vein through the openings which it has previously made, and the end of the ligature caught up and brought back. The vein is thus subcutaneously included in the ligature, which is then tied and cut short, and, if the catgut is fine enough, the knot pushed back beneath the skin. If, however, the vein is larger, and coarser catgut has to be used, no trouble results from leaving the knot in the orifice of the wound; in fact, he prefers it.

After the dressings have been applied, the limb should be placed upon a posterior splint and the patient kept in bed for about ten days or two weeks, after which he should wear a roller bandage for two months. The number of ligatures necessary to be applied is a matter of absolute indifference. The patient will recover just as rapidly whether he has few or many.

He restricts the operation to:

1. Cases where this condition constitutes disability in physical examination —as for admission to the army or navy, or for appointment in a municipal department.
2. Cases where the size of the veins, the formation of venous tumor, or the attenuation of the coats or tegumentary coverings threaten hemorrhage.
3. Cases where chronic ulceration or eczema exists.
4. Cases where circulation has been so far impaired as to occasion swelling of the feet or loss of power in the limb.

OTOLOGY.

UNDER THE CHARGE OF

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The Nature of Influenza, with Special Reference to the Aural Symptoms.

Dr. J. Michael, of Hamburg (*Deutsche med. Wochenschrift*, Feb. 6, 1890), has described some features peculiar to the ear-diseases manifesting themselves in Germany in the recent epidemic of influenza. He divides them into two classes. The first comprises those which resemble ear-diseases which occur in any case of catarrh of the nasopharynx. The second group do not represent a condition following the disease, but are, in fact, the disease itself localized in the ear.

The conclusions are as follows:

1. The aural symptoms in influenza are subjectively and objectively the expression of an intense hyperæmia of the mucous membrane of the auditory apparatus.
2. The chief characteristic of the symptoms of influenza compared with those of other infectious diseases, in uncomplicated cases, consists in an intense hyperæmia of the organs attacked; in fact, disproportionate to inflammations from other causes.
3. The hyperæmia is also the indirect cause of the complications observed: *first*, because in the weakened walls of the bloodvessels it tends to rupture and hemorrhage; and *secondly*, because it lights up afresh an inflammation already healed or become chronic; and *thirdly*, it renders the mucous membranes highly susceptible to the reception of other conveyers of infection.
4. The treatment should correspond with the demands of this theory.

5. The name "influenza," "grippe," may be applied to the recent pandemic, while the ordinary, regular epidemic bronchial catarrhs should be called epidemic catarrhs.

The Connection between Epidemic Influenza and the Catarrhal Affections of the Eustachian Tube and the Tympanic Cavity.

Dr. Lacoarret, of Salies-de-Béarn, has written an interesting article on the above-named subject (*Journal de Médecine de Bordeaux*, February 2, 1890). He states that from the time the influenza, or "la grippe," first appeared in Bordeaux acute and subacute catarrhal affections of the ear became more and more numerous. Tubal catarrh and inflammations of the middle ear are usually more numerous in the spring and autumn, rarely occurring in midwinter, excepting as sequels to the eruptive fevers, etc., preceded by inflammation in the pharynx or of the nares. As the grippe is often accompanied by coryza, redness of the throat, and more or less naso-pharyngeal catarrh, it is easy to explain the presence of ear-diseases at a time of year when such maladies do not prevail usually to any great extent. Thus, between December 20, 1887, and January 28, 1888, four acute cases of ear-disease were reported in the clinic at Bordeaux. Between the same periods in 1888, 1889, six cases were reported, while within the same period in 1889–1890, there were thirty-two cases reported—*i. e.*, during the presence of the epidemic of influenza. Similar statistics are offered by other cities in France.

Excision of the Membrana Tympani and the Two Larger Auditory Ossicles for the Cure of Chronic Otorrhœa.

Ernst Wetzel, in his inaugural dissertation (Halle, 1889), gives a review of twenty-eight cases of this operation, performed at the clinic in Halle. The indications are those given by Schwartze, in his treatise, viz., chronic purulency of the middle ear with caries of the auditory ossicles, or cholesteatoma in the drum cavity. By this operation some of the diseased tissue may be removed, and access given for more perfect treatment of diseased parts which may still be left. The attic is thus exposed to a more complete medication. In the aforesaid twenty-eight cases fourteen were accompanied by perforation in the membrana flaccida. Five times both ears were operated on. The result, in seven instances, was a complete cure of the suppuration, and in six instances a great improvement ensued. Whenever no improvement occurred there was reason to believe that a carious condition existed in the walls of the drum cavity, or in the mastoid cells. In such cases the mastoid process may demand trephining.

So far as concerned the hearing, in thirteen cases the operation was followed by an improvement in hearing. This varied in degree from a slight improvement to as much as hearing a whisper one metre from the ear; the latter being observed in four cases. The best result amounted to hearing a whisper three metres from the ear. In two instances the hearing was worse after the operation than before; in all the rest the hearing was unaffected by the operation. The operation, notwithstanding the use of antiseptic tampons in the canal was followed, in most of the cases, by purulent inflammation, which varied in duration. In two instances facial paralysis ensued on the operated

side, which finally disappeared; in one case, however, not for seven weeks. The date of these operations is not given in the notice we have read.—Blau, *Archiv für Ohrenheilkunde*, vol. xxix., December, 1889.

Mobilization of the Stirrup.

M. Moure, of Bordeaux, and M. Miot, of Paris, presented synopses of their labors on this subject at the Congress of Otology and Laryngology, Paris, September, 1889 (see *Annales des Maladies de l'Oreille*, November, 1889). The first-named investigator, after mentioning aurists who have employed this method of treatment of deafness, stated that it really had not come into use as a method of treatment until the previous year, after the investigations of Boucheron. Two classes of cases are named in which the results observed are absolutely different.

In dry, adhesive otitides mobilization improves the hearing, temporarily. But as the operation cannot cure the primary process, all the defects soon reappear. In some instances the subjective noises and the deafness increase after the operation. In the second group should be placed the cases of adhesion, consecutive to suppuration. The locality and extent of these adhesions, however, may be contra-indications for the mobilization. On the other hand, amelioration of the tinnitus and the hardness of hearing are often obtained by the operation, in which antiseptic precautions are indispensable.

M. Miot, of Paris, has also availed himself of the operation of mobilization of the stirrup. He agrees with Boucheron that the best time for operating is at the beginning of the ankylosis. He has performed the operation a number of times, and obtained improvement in seventy-four cases. It is indicated in cases of deafness consecutive to otitis media purulenta with persistence of a perforation in the membrana, not improvable by the artificial membrane. There may be added to this: 1. Cases of deafness without notable thickening of the membrana, with or without integrity of the cranial perception for the watch, and with or without tinnitus. 2. Cases of deafness with diminution of cranial perception, tinnitus, and dizziness. 3. Deafness with thickening or relaxation of the membrana, with diminution of cranial perception, tinnitus, and dizziness.

The operation is furthermore indicated in a certain number of cases in which the membrana is not perforated. It is contra-indicated in (1) all cases of persistent perforation of the membrana with suppression of cranial perception, without subjective noises; (2) in all cases of deafness essentially nervous, from labyrinth disease; (3) and in all cases of complete osseous ankylosis of the stirrup.

Miot's operation consists in making a long incision in the posterior half of the membrana, near the annulus tympanicus, which gives plenty of light in the drum cavity, and is likely to heal slowly when made at this point. He then does not break the chain of ossicles, nor does he use a hook, but a miniature hoe-like instrument, with which traction is made on the incudo-stapedial joint, while the patient perceives a boiling sound in his ear.

The results are: Improvement in bone perception and hearing—sometimes

not for several days however; and it is sometimes necessary to repeat the operation several times.

The author's conclusions are:

1. Mobilization of the stirrup is the most efficient method of combating deafness from ankylosis of the stapes. It should not be employed, however, until all methods of treating the chronic catarrh of the middle ear have been tried.

2. It is in no way dangerous for the patient, and is not followed by suppuration when vigorous antisepsis is followed out.

[While this operation is one step in the right direction—viz., in operating upon the ankylosed structures of the middle ear, we cannot agree with Boucheron that mobilization of the stirrup alone is "the operation of the future." Excision of the membrana and the two larger ossicles will permit a constant and natural mobilization of the stapes by the action of sound-waves upon it far more prolonged and efficient than a mere doubtful instrumental mobilization of the stapes by any method yet suggested.—ED.]

DISEASES OF THE EAR IN DIABETES.

PROFESSOR KUHN, of Strassbourg, delivered a lecture on the above-named subject in the section of otology connected with the Naturalists' and Physicians' Association, held at Heidelberg, September 19, 1889. He alludes, in chronological order, to the prominent contributions to this subject of Griesinger (1859), Jordaô (1857), Toynbee (1860), Külz (1874), Roser (1880), Raynaud (1881), Frerichs (1884), Kirchner (1885), Schwabach (1887), and Moos (1888). The clinical symptoms depicted by many of these writers are, as follows. A violent otitis media acuta, with profuse suppuration, often accompanied with hemorrhage from the ear, and the onset of mastoid inflammation. Very often the surgeon is confronted by a true osteitis of the petrous bone, all parts of it being liable to the attack. Kuhn suggests for this process in those affected with diabetes the name of "otitis diabetica." In some instances the mastoid has been opened with success; in others the operation has not prevented the brain from being attacked, and the fatal termination of the disease. One author believes that the operation of opening the mastoid for relief of the inflammation and suppuration at that point is justifiable, because it offers the patient a possibility of recovery, while an expectant or conservative course will surely lead to his death.

He then gives an account of two cases of "otitis diabetica" in his own practice:

The first case occurred in a man fifty-four years old, who had been affected with diabetes one year. He was, also, a hard drinker of spirits. The ears had always been normal. Suddenly, when he was suffering from sore throat, he was attacked by otitis media on the right side, which, in two days, was followed by rupture of the drum membrane and a copious purulent discharge. Notwithstanding this the pain continued unabated. The hearing was entirely suspended by the third day, the tuning-fork being heard only when the handle was pressed firmly into the meatus. On the seventh day there was detected a superficial swelling in the skin of the mastoid, without special redness. The patient declined all rational treatment, and insisted that his

cure depended upon a journey into the country (he lived in Strassbourg.) He therefore went to the Black Forest. Two days after his arrival at his friend's house he was seized with a heavy chill, to which succeeded severe vomiting for several hours. The next day profuse hemorrhage from the ear occurred, lasting ten minutes, the blood being of a very dark color. The suppuration, which had been excessive up this time, now ceased, and did not reappear. On the same day severe dizziness set in, so that the patient could neither walk nor stand. In the evening he was attacked with hæmoptysis, and decided to return to his home in a carriage, which he did. That same night he was attacked by two severe chills, and toward morning general convulsions appeared, the patient became comatose, and died a few hours later. The post-mortem examination revealed an enlargement of the tympanic and mastoid cavities, with entire destruction of all their normal contents. In the upper posterior wall of the cavum tympani there was a large perforation into the sigmoid sinus. In addition, the upper, meningeal covering of the superior petrosal sinus was perforated to the extent of two centimetres. The remaining portions of the pyramid were softened, and could be cut almost as easily as wax. The membrana tympani was greatly thickened, but the perforation in it could no longer be found. There was a recent purulent meningitis on the right side and at the base of the brain.

The second case, a man fifty years old, presented a suppuration in the right ear, which defied all rational means of treatment. The left ear had been the seat of suppuration twenty years previous, and had remained deaf ever since. Dr. Kuhn observed an odor resembling acetic acid in the breath of the patient, who had very bad teeth. An examination of the urine revealed five per cent. of sugar. There were several cases of deafness and diabetes mellitus in the patient's family. Anti-diabetic treatment had no effect on the suppuration of the ear and the deafness. Finally, a fresh attack of pain was experienced in the left ear, with a swelling over the mastoid and also a round, soft tumefaction in the auditory canal, two centimetres from the meatus. An incision in both of these swellings gave vent to yellow, thin pus. Discharge of pus continued free for some weeks, which, if temporarily stopped, caused pain in the ear and mastoid process. The quantity of sugar increased in the urine. A periostitis of the mastoid, in consequence of an otitis media, was fully established. It was supposed that here, too, a deeper condition of disease would be found, as in the previous case—*i. e.*, a "diabetic otitis," in which the entire apparatus of the middle ear, and especially the mastoid cells, would be involved. It was, therefore, deemed advisable to make a deep and wide incision in the skin and expose the mastoid, and then open the mastoid cavity. The condition of the patient's mind forbade this. An anti-diabetic treatment was kept up therefore for four weeks, with some improvement in the general condition of the patient. The ear continued unimproved. Suddenly the other ear became painful, and a similar process was established in it.

General treatment was continued for some weeks without any good effect. The proposition to open both mastoids was now entertained. An incision, four centimetres long, through the skin of both mastoids, exposed the bone. The latter was found smooth, and externally unaffected. The fistula from the meatus of each ear was connected with the outer surface of the mastoid. The hemorrhage from the cuts being excessive, and no disease in the bone

being found, it was decided not to open the mastoid cavity. In six weeks both wounds healed, as did also the fistulous openings in the auditory canal. The opening in the right membrana tympani healed; the hearing improved; the patient continued to manifest from 0.5 to 3 per cent. of sugar in his urine.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF

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Professor Billroth's Operations on the Larynx.

Dr. Fritz Salzer reports (*Archiv für klinische Chirurgie*, Bd. xxxix. H. 2, 1889) eleven unpublished operations performed by Billroth between January 1, 1885, and June 30, 1889, and then presents a table of thirty-four operations performed between March 21, 1870, and May 19, 1889, with various comments and reflections which can hardly be suitably presented in abstract in the limited space at command.

The operations for carcinoma were as follows. There were five total extirpations. Of these, one patient died seven months after operation, with recurrence; one died five weeks after operation from a wound in the œsophagus; three died within the first week after operation. For nine years past Billroth has no longer practised total extirpation, having found that some portion of the larynx can be retained in every instance. There were six complicated resections. None of the patients died in consequence of the operation; but recurrence ensued in every instance. Two patients died five weeks after operation; one three months, and one four months after operation: while two were living eight months and two months respectively after operation, but with recurrence in both instances.

There were eight simple partial resections. Of these, two patients died one and six days after operation respectively; one died in one and three-quarters months with pleuritis; one died in one and a half years with topical recurrence; one died four years after operation, apparently from glandular metastases; one is living one year after operation, but with recurrence; and two are living without recurrence, a year, and three and a half years after operation.

There were ten laryngofissions. Of these, three patients died within the first ten days; in two, topical recurrence ensued within a month, rendering further operation necessary; in one case the carcinoma could not be extirpated and total extirpation was practised later; one patient died two and a half years after operation, with recurrence; one left the hospital well but had not been heard from since; one is living without recurrence eight years after operation; and one is without recurrence two months after operation.

The five operations for other diseases were as follows: One laryngofission for tuberculosis of the larynx diagnosticated after operation. The patient died in eight days of tuberculosis of the lungs and of the ileum. One laryngofission for cicatricial stenosis after a laryngotomy practised some six years previously. The wound healed by suppuration; cicatricial stenosis recurred; unilateral extirpation was practised; the patient recovered with permanently impaired glutition, that function having been perfect before the extirpation. One laryngofission for rhinoscleroma; recurrence. One laryngofission for extensive papillomata; recurrence, and endolaryngeal operation; whispering voice.

Several of these cases are made the subject of special comment. The selection of cases for operation and the choice of procedure are discussed. The method of operation and after-treatment recommended as the outcome of Billroth's experience is summed up as follows:

Narcosis with a mixture of chloroform, alcohol, and ether. High tracheotomy. Insertion of Trendelenburg's tampon. Laryngotomy. Splitting the larynx in the middle line from below upward with probe-pointed bistoury or with bone-scissors. Excision of the diseased tissues, or resection of portions of the larynx by freeing the structure from below upward. Thorough arrest of hemorrhage by ligature and by compression. Accurate tamponing of the wound with iodoformed gauze, kept in position from five to ten days. Simple, unfenestrated tracheal canula. Antiseptic dressing. Artificial feeding by the œsophageal tube when demanded by necessity. Withdrawal of the canula as soon as practicable after removal of the tampon of iodoformed gauze.

Large Hard Papilloma of the Nasal Passage.

A unique case of extensive corneous warty growth of the upper portion of the nasal passages is described in detail and illustrated by Dr. O. von Büngner, of Halle (*Archiv für klinische Chirurgie*, Bd. xxxix. H. 2, 1889). It was developed in a man sixty-three years of age, on the surface of a previous psoriasis of the mucous membrane of the septum narium, and in association with an ozæna which had existed since his puberty. The coincidence of these two conditions is regarded by Büngner as probable important factors in the production of the growth.

At eleven years of age the patient had a slight wound of the nose from the blow of a flail. In his twentieth year he was struck on the nose again by an unharnessed horse, both nasal bones being broken and slight obliquity of the organ remaining. His ozæna excepted, he remained well for thirty-two years, when complete occlusion of both sides of the nose gradually set in. Several fragments of tumor were removed from the septum on two occasions of six weeks' interval, but with only palliative effects. Complete eradication was attempted by external access, and the growth was then extirpated in several fragments, the combined weight of which was not less than nine drachms. The tumor occupied chiefly the upper portion of the cartilaginous and osseous septum, whence it extended to the roof of the nose and to the plate and to the cells of the ethmoid bone, into which it penetrated so deeply that the greatest care was necessary to avoid penetration into the cranial cavity. It

did not encroach upon the anterior wall of the nose nor upon the lateral walls. It had produced a large perforation of the septum. The mucous membrane of the septum was found to have undergone psoriasis, strips of which remained free between the dendritic attachments of the growth. The examination of the growth showed it to be a hard or corneous papilloma developed in the mucous membrane of a septum altered by ozæna and by psoriasis. The cylindrical and ciliated epithelium of the entire upper portion of the nasal passages were completely changed into squamous epithelium. The mucous membrane supported a covering of several layers of squamous epithelium slightly cornified superficially. The sub-epithelial tissue had the character of granulative tissue. No trace of the glands could be detected in the mucous membrane. For details the original article must be consulted.

After leaving the hospital the patient did well for four months, when recurrence took place on the right side, and a few electro-caustic procedures were practised unavailingly by his attending physicians. The recurrent growth eventually involved the left side of the root of the nose, and an external operation was practised sacrificing this portion of the structure. To repair this defect a flap had been prepared; but the patient changed doctors before the proper period for its attachment, and his new attendant cut the flap off, leaving him without a nose. A slight recurrence took place a month or so later, but was destroyed with scissors and incandescent heat. For seven months following this period there had been no further recurrence.

OBSTETRICS.

UNDER THE CHARGE OF

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Antiseptics in the Hands of Nurses and Midwives.

At a recent meeting of the Academy of Medicine of France, the question as to the propriety of placing antiseptics in the hands of nurses and midwives was brought up for discussion. The conclusion was reached that fixed rules should be given nurses regarding precautions which they are to take personally. In choice of antiseptics bichloride of mercury was selected in preference to carbolic acid, and powders containing sufficient bichloride to make antiseptic solutions when added to a quart of water, are authorized to be given to nurses for their use. Tartaric acid and red dye material were combined with the mercury to prevent poisoning and increase solubility. Creolin is rejected because of its unpleasant odor, and the length of time required to produce its effect.—*Revue Générale de Clinique et de Thérapeutique*, No. 6, 1890.

The Value of Acetic Acid as an Antiseptic in Obstetrics.

Schaeffer (*Centralblatt für Gynäkologie*, No. 6, 1890), has reviewed the statements of Battlehner and Engelmann concerning the value of acetic acid as an antiseptic. His own conclusions are based upon experiments with pure cultures of septic bacteria, and he concludes that carbolic acid is fifteen times as efficient a destroyer of the spores of anthrax as is acetic acid, and over two hundred times as efficient an antiseptic as acetic acid in other poisonous germs. He would therefore not rely upon acetic acid in the treatment of puerperal cases.

Changes occurring in the Tubes and Ovaries during Pregnancy and the Puerperal State.

Thomson (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band xviii. Heft 1) finds that the tubes undergo very appreciable changes during pregnancy and the puerperal state. During pregnancy the connective tissue is more freely supplied with blood, is more succulent, and increases slightly in thickness, and the muscular tissue of the tube hypertrophies as does the muscle of the uterus, but in less degree; during the puerperal state the muscle cells undergo a retrograde metamorphosis in the same manner in which the muscle cells of the uterus undergo involution. No appreciable change was observed in the structure of the ovaries during pregnancy or the puerperal state.

The Prognosis of Pregnancy occurring after Cæsarean Section.

Torggler (*Wiener Klinik*, 1890, Januar heft) has studied one hundred and seventy-one cases of Cæsarean section, to determine the prognosis in pregnancy occurring after Cæsarean section.

Liability to conception is not diminished by Cæsarean section, and patients in whom the silver wire suture has been employed enjoy the best of health subsequently.

The dangers attending pregnancy occurring after Cæsarean section and a birth accomplished by repeated Cæsarean section are not especially greater than in the first section. The most serious accidents are caused by adhesions between the uterus and tissues about it. These, however, occur less frequently after the use of the silver wire, than when silk or catgut is used for sutures.

A Case of Air Embolism following Intra-uterine Tamponing with Iodoform Gauze in Placenta Prævia.

Vavra (*Centralblatt für Gynäkologie*, No. 1, 1890) reports a case of placenta prævia lateralis, in which the uterus was tamponed with iodoform gauze for post-partum hæmorrhage; after the insertion of a few strips of gauze, cyanosis suddenly came on and respiration ceased and death occurred. Post-mortem examination disclosed air in the veins of the broad ligaments, in both internal spermatic veins, in the inferior vena-cava, in the right side of the heart, and in the pulmonary artery; anæmia and pulmonary œdema were present. The embolism occurred during the insertion of the gauze.

Placenta Prævia Lateralis with Unusual Toughness of the Membranes.

Stapfer (*L'Union Médicale*, No. 2, 1890) reports a case of placenta prævia lateralis in which it was impossible by the finger nails or by pressure to rupture the membranes. This led Stapfer to devise an instrument resembling a pair of forceps with a sheathed cutting edge. He is convinced of the inefficiency of the methods usually employed to rupture the membranes in dangerous cases where prompt rupture is a question of great importance.

The Best Method of Delivering the After-coming Head.

Eisenhart (*Archiv für Gynäkologie*, Band xxxvi. Heft 2) believes the best method of delivering the after-coming head to be by inserting the longest finger of the left hand in the child's mouth, as far as the base of the tongue, the child being astride the forearm. With the right hand pressure is made downward and backward behind the symphysis pubis upon the head, the greater force being exerted by the right hand. In fifty cases so delivered at Munich the chances of delivering a living child were seven times better than by other methods; an equal advantage to the mother in freedom from laceration and successful recovery was also observed.

The Forceps applied to the Breech.

Tarnier (*Le Mercredi Médical*, No. 4, 1890) has found the application of the forceps over the trochanters of the femora of especial advantage in delivering breech presentations. When applied in the bis-iliac diameter damage may be done to the child and the instrument will slip. Over the trochanter a firm grasp is obtained, and Olivier's series of experiments failed to show injury to the fœtus. Tarnier would apply forceps when it is impossible to bring down a foot by the introduction of the hand. He considers the forceps safer than the hook, as fracture of the femur is frequently caused by the latter. The fillet, or band of tape, may be used to advantage in some cases with the forceps. The axis-traction instrument is preferable.

The Treatment of Rupture of the Uterus.

Leopold (*Archiv für Gynäkologie*, Band xxxvi. Heft 2) reviews the recent writings of Veit, Piscaçek, and Winckel, on this subject, and from his experience and study concludes that the following is the best method of treatment:

The abdomen antiseptically cleaned, a vaginal douche and vaginal tampon of iodoform gauze; there should be ready sterilized or iodoform gauze cut in strips three finger-breadths wide and the length of the forearm, stimulants, ergotin solution, towels, hot water, and one quart of sterilized salt solution six-tenths per cent.; this should be injected subcutaneously, not by intravenous injection. The abdomen should be opened under light narcosis, the child gently removed through the rent in the uterus, the placenta is sought by following the cord and removed, and amniotic fluid and blood are carefully sponged with bits of gauze. The edges of the rent may be trimmed and

stitched together, which generally stops bleeding. When it is impossible to suture, a strip of gauze folded many times upon itself, to make a firm tampon, may be placed in the rent, one end brought out at the vulva, the other end remaining in the uterus; the uterus may be pressed firmly down into the pelvis, the edges of the rent in the peritoneum brought together, and gauze packed firmly about the uterus, the end being brought out at the lower end of the abdominal incision.

The Porro operation remains for those cases where other methods fail, and in this the gauze tampon is of use in preventing bleeding about the point of rupture. It is of the greatest importance in these cases that the source of the bleeding be treated as soon as possible; intra-abdominal hemorrhage is the rule, and may be severe.

Leopold adds the following cases: 1. Complete rupture on the right side of the uterus in a syphilitic patient caused by efforts at delivery; the breech escaped; perforation and cranioclasis; the edges of the rent brought together as well as possible, and iodoform gauze tampon introduced per vaginam, with a pressure bandage over the uterus. Saline solution subcutaneously; recovery.

2. Highly contracted rhachitic pelvis in a weak patient. Complete right-sided uterine rupture; subperitoneal hemorrhage extending to the kidneys; craniotomy; iodoform gauze tampon; injections; death in three hours in collapse. In this case Leopold ascribes death to the failure of the attending physician to diagnose the rupture, and the omission of laparotomy.

3. Complete rupture in contracted pelvis; head presenting; arm prolapsed; profuse hemorrhage; perforation and cranioclasis; tampon and injections; death on fourth day; profuse abdominal hemorrhage. Leopold cautions against version, but would perform embryotomy and cranioclasis.

Rupture of the Uterus Complicated by Carbolic Acid Intoxication.

Gustave Braun (*Wiener klinische Wochenschrift*, No. 50, 1889) reports a case of ruptured uterus through delayed labor and excessive efforts at expulsion. Injections of 2 per cent. carbolic acid solution had been given by the midwife in attendance, and sufficient had escaped into the abdomen to cause carbolic acid intoxication severe enough to render an anæsthetic during laparotomy unnecessary. A large dead child was delivered through the abdominal incision, and a circular rent in the uterus on its anterior surface, 5.8 inches long, was found with a peritoneal tear and laceration of the tissue extending to one labium. Sublimate silk was used for suture, accompanied by the tampon. The patient rallied, but died of purulent peritonitis on the fourth day.

Cæsarean Section for Bony Tumor of the Pelvis.

Kelly (*Medical and Surgical Reporter*, No. 4, 1890) reports a successful Cæsarean section upon a multipara, in whom birth was impossible because of a large bony tumor springing from the sarcum and ilium of the right side. The patient's previous labors had been terminated by embryotomy. The pelvis was rhachitic, the antero-posterior diameter measuring externally seven

inches. After careful preparatory treatment, the Cæsarean section was performed after Sänger's method. Bleeding was prevented by grasping the cervix with the hand, and the usual deep and superficial sutures were inserted. The duration of the operation was fifteen minutes. An uncomplicated recovery of mother and child followed. An occlusive dressing was used after the operation; the sutures were removed on the seventh day; the patient went home on the nineteenth day.

Tubal Pregnancy treated by Injection of Chloride of Zinc.

Sotschawa (*Med. Rundschau*, No. 1, 1890) reports a case of ectopic pregnancy at two months in which a tumor the size of an apple was found on the right side of the uterus, the usual symptoms of ectopic pregnancy were present; two injections of fifteen minims of a five per cent. solution of chloride of zinc were made into the tumor at intervals of six days; a discharge of mucus, pus, and decidual cells from the uterus followed; the tumor lessened in size to that of a normal tube, three weeks later normal menstruation occurred. This case is open to the criticism of a mistaken diagnosis in the absence of laparotomy.

Two Cases of Ruptured Tubal Pregnancy.

Hamilton (*New York Medical Journal*, No. 6, 1890) reports two cases of tubal pregnancy successfully operated on after rupture. In one case rupture occurred during defecation; a deciduous cast of the uterus was expelled. Operation was made a month later, and a fœtus and appendages were washed out of the abdomen with a mass of clots. In the second operation the patient was in profound collapse. After operation sixteen ounces of warm saline fluid were transfused with good results. In both cases rapid operation, flushing the abdomen with hot water, and the use of the drainage tube were efficient —both patients recovering without fever.

Ectopic Gestation. The Treatment of Tubal Pregnancy by Injections of Zinc Chloride.

Sotschawa (*Medicinische Rundschau*, Russische, 1889, No. 1) reports a case presenting the clinical signs of tubal pregnancy, with tumor in the right side of the uterus of eight weeks. Two injections of fifteen minims of 5 per cent. solution of zinc chloride were made into the tumor, at intervals of six days. A mass of mucus, pus, and decidua was expelled from the os, and the tumor disappeared. Normal menstruation occurred three weeks later. The diagnosis in this case is not positive.

Subsequent History of Extra-uterine Pregnancy Treated by Electricity.

Brothers (*American Journal of Obstetrics*, No. 2, 1890) has collected 50 cases of extra-uterine pregnancy treated by electricity, and 25 cases in which the patient's condition has been observed from one to four years after treatment. In the first series, a mortality of 10 per cent. resulted. In the second

series, 23 out of 25 were reported in good health. In two cases extra-uterine pregnancy had recurred. In 7 cases a small tumor or some alteration in the tissues remained. Brothers concludes that risk of rupturing the sac by electricity is very slight; suppuration has not occurred in any case operated upon before the third month; beyond this period electricity should not be employed; electro-puncture is to be condemned.

The Treatment of Mastitis with the Plaster-of-Paris Bandage.

Meisel (*Bullet. Gênêr. de Thêrap.*, No. 22, 1889), reports twelve cases of mastitis treated by the plaster-of-paris bandage. After cleansing the breast thoroughly it is surrounded by gauze, an opening left over the nipple; the breast is enveloped by a gauze bandage dipped in plaster-of-Paris; a bandage upon the outside protects the dressing from injury. This treatment was employed where it was desirable to stop lactation, and in twenty-four hours after the application of the dressing hardness and swelling in the breast disappeared, and the milk ceased. The gauze placed next to the breast was antiseptic.

The Treatment of Post-partum Hemorrhage

Küstner (*Deutsche med. Wochenschrift*, No. 1, 1890) regards post-partum hemorrhage as generally caused by improper management of labor. Death from this cause rarely occurs in good hands. Hemorrhage from the vagina and cervix may be immediately checked by closing the lacerated tissue by a stitch or by an antiseptic tampon. Uterine hemorrhage may be avoided by emptying the uterus slowly; the child's body should never be removed forcibly, but should be expelled by uterine contractions; traction should be made by forceps with the pains only. Rapid delivery of the placenta should be avoided; at least fifteen minutes should elapse before any effort is made, and then uterine contractions should be aided, not superseded, by pressure. Cornutin is thought the best preparation of ergot for use in these cases.

There remains a class of cases in which hemorrhage is not caused by failure of uterine contraction, as usually, but by rupture of an artery or atheromatous degeneration and rupture of the vessels at the placental site accompanying nephritis, in which the intra-uterine tampon is indicated. In cases occurring where the practitioner has no assistance the tampon may be easily, quickly, and safely applied in all cases of post-partum bleeding; iodoform gauze is the best material. Küstner reports eight cases successfully treated by this means.

Fœtal Death and Maternal Infection caused by Infection of the Amnion.

Hue (*Archives de Tocologie*, No. 1, 1890) has recently observed the case of a multipara in whom no history of specific infection could be obtained. Shortly before labor she was taken with chills, followed by an eruption, accompanied by violent movements on the part of the fœtus which gradually ceased. When labor began an excessively offensive discharge occurred,

and when the membranes ruptured the amniotic liquid was found decomposed, fetid, and exceedingly offensive. Delivery was accomplished by the forceps. The child was dead and showed symptoms of maceration. Post-partum hemorrhage followed, but was easily checked; the maternal decidua had become infected, however, and septic infection followed and death resulted. In the absence of a specific history the question as to how the amnion became infected is not readily answered.

The Influence of Menstruation upon Lactation.

Schlichter (*Wiener klinische Wochenschrift*, No. 5, 1890) concludes from an extensive study on this subject that menstruation occurring later than six weeks after the birth of a child has no injurious effect upon the mother or child so far as nursing is concerned. Should menstruation or hemorrhage occur earlier than six weeks it may retard the development of the child. Dyspepsia, colic, and entero-colitis occurring in children nursing during menstruation are to be considered as coincident with, but not caused by menstruation. They should be treated as if they occurred at any other time, and the nurse should not be changed on that account.

Respiration in Prematurely Born Children.

Glockner (*Centralblatt für Gynäkologie*, No. 1, 1890) reports three cases of prematurely born children, one at four months, one at fifteen weeks, the third at nineteen weeks, in whom respiratory movements were followed by marked increase in the vigor and frequency of the heart's action; the mouth was open in these cases during respiratory movements, these movements lasted a little over an hour; on post-mortem examination the lungs were not inflated, and sank when thrown into water; the stomach contained air, and there were also evidences of oxygenation of the blood in the heart. The conclusion is reached that the fœtus swallowed air, and that oxygenation of the blood in the gastric vessels resulted, which increased the vigor and frequency of the heart's action.

In a criticism upon Glockner's cases, Schultze admits the accuracy of Glockner's observations, but considers the amount of oxygen obtained by the fœtus in this manner to be too small to play any part in respiration. He would employ inflating the lungs and artificial respiration in cases of asphyxia where arterial and venous tension are nearly equal; where arterial and venous tension are unequal he considers his method of inflation of the lungs by swinging the child to be the most efficient. (*Centralblatt für Gynäkologie*, No. 6, 1890.)

Sterilized Milk.

Escherich (*Münchener med. Wochenschrift*, No. 46, 1889) finds a convenient method of corking bottles in which milk is sterilized, to be by boring a small hole through the neck at such a height that it will be covered by the rubber nipple when applied. A rubber cork is used with a notch so cut that by turning it opposite the hole a small aperture is created, through which gas may escape in the first stages of sterilization. After the gas has escaped

the cork is turned again and the bottle made impervious. Heating for an hour in all has generally been employed. Malt extract may be mixed with milk and the whole sterilized. Milk may be sterilized in bulk in tin trays or bottles by means of steam, in Koch's sterilizer. If possible, not more than an hour should elapse between milking and sterilization of the milk. Hay bacteria are not always destroyed by sterilization, but the bacteria producing acids are destroyed. The practical value of sterilization is proven.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,

OF NEW YORK.

Observations on the Origin of Ovarian Cysts.

Heneage Gibbes (*Boston Medical and Surgical Journal*, January 30, 1890) discusses three causes of cystic disease of the ovaries, viz.: 1. Overgrowth of preëxisting tissue; 2. Degenerative changes, giving rise to cavities or cysts; 3. Simple distention of Graafian vesicles. The first mode of formation is by the overgrowth of epithelial cells, which are probably of embryonic origin. Cysts thus derived have a wall lined with these polyhedral, granular cells, which are frequently vacuolated. The cavity contains a coagulated material, which is structureless and gives a different reaction from either colloid matter or liquor folliculi. A comparison is instituted between these groups of cells and the condition described by Dr. Mary A. Dixon Jones as "endothelioma," the writer believing that they are identical and that there is no reason to believe that it resembles carcimona, either in its structure or in its progress.

The formation of cysts by degenerative processes is usually described as due to a colloid transformation of the stroma, but the homogeneous hyaline material into which the tissue is changed does not give the colloid reaction.

The third mode of origin is by the dilatation of ovisac, the wall of the cyst being constituted by the condensed stroma. The microscope throws no light upon the *causa ultima*.

Sterility in Woman.

Oliver (*Liverpool Medico-Chirurgical Journal*, January, 1890) contributes a sensible article on this subject, in which he takes the position that there is too much unnecessary treatment of the female for the cure of sterility which is really due to the male. Gynecologists are too apt to infer that because a woman has been married for years, without impediment to the sexual act, and has never become pregnant, therefore there is some anatomical defect in her pelvic organs. "A semblance of brilliant results obtained by a too meddlesome interference may be paraded, but careful observation teaches us that the good which follows is invariably the outcome of an enforced sexual rest." There are many occult causes of unfruitfulness with which we are unacquainted, even when there are no apparent obstacles to conception. The

writer estimates that one woman out of every fifteen is sterile, hence the male percentage is much higher—one in six, according to Gross.

[We cannot sufficiently commend a writer who calls attention forcibly to the injustice which is done to unfruitful women not only by their husbands, but too often by gynecologists. There are many able specialists who, whenever they find a slight anteflexion associated with sterility, at once jump at the conclusion that the latter is directly dependent upon the former, that it is unnecessary to seek further for a cause of the sterility, and that the only treatment is—divulsion and the introduction of a stem. This is all the more remarkable, because those same men would never think of making such a hasty deduction under any other circumstances. Statistics of numerous miraculous cures of sterility by any given method of overcoming a supposed cervical stenosis are not useful to the general profession if they lead them to make extravagant promises to their patients, which are only followed by bitter disappointment.—Ed.]

The Results of the Removal of Diseased Ovaries and Tubes.

Imlach (*Ibid.*) has taken the precaution to obtain the after-history of many of his patients (of whom he has operated upon 142), in order to ascertain their subsequent condition. In forty-three cases of oöphoritis and salpingitis eighty per cent. were much improved in health and were free from pain, but menstruation (metrostaxis?) had entirely ceased in only sixty per cent. Eleven women from whom cystic ovaries had been removed were all in perfect health. Thirty-four patients who had been operated upon for ovarian abscess or pyosalpinx were greatly benefited, but twenty-five per cent. still complained of pain, and in forty per cent. menstruation was still regular. Of eighteen women who had hydrosalpinx, fourteen were cured, and four were in poor health.

Out of thirty-six cases of removal of the adnexa for the relief of hemorrhage from uterine fibroids, menstruation ceased in between sixty-five and seventy per cent. within a period of six months, and in the other cases it recurred normally. In only one instance did profuse hemorrhage continue. "In all cases in which pain was severe or disabling, it has been relieved." In some instances the writer believes that the diseased condition of the appendages (and they are, he says, invariably diseased) causes the rapid enlargement of the tumor, which quickly diminishes in size as soon as the stimulus to growth is removed. The removal of *healthy* ovaries and tubes in the case of large uterine tumors is of doubtful benefit; if any surgical interference is indicated, hysterectomy is preferable.

Myomotomy and Splenotomy in the same Patient.

Bollici (*Raccoglitore med.; Centralblatt für Gynäkologie*, October 26, 1889) reports the case of a woman, aged thirty-eight, upon whom he performed laparotomy for the relief of uterine hemorrhages due to the presence of a fibro-myoma in the anterior uterine wall. Nearly all of the uterus was removed with the tumor, the stump being treated according to the intraperitoneal method. A wandering spleen, weighing seven and one-half ounces, was removed at the same time, the patient making a good recovery.

Partial Extirpation of the Ovaries and Tubes.

Martin (*Sammlung klinische Vorträge*, No. 343) describes ten cases in which he removed only the diseased portions of ovaries, three of the patients subsequently conceiving. In seven cases he practised partial resection of the tubes. When the tube was buried in adhesions and its fimbriated end was occluded, he broke up the adhesions, opened the distal end, and, in order to prevent the formation of fresh adhesions, attached the tube to the corresponding ovary. He summarizes as follows: 1. The removal of circumscribed diseased portions of an ovary does not prejudice the patient's recovery. 2. The same applies to the resection of portions of diseased tubes. 3. In the seventeen cases reported no further morbid processes were set up in the tubes and ovaries thus treated. 4. Menstruation continues to be normal. 5. Patients in whom this operation has been performed are perfectly able to conceive.

Creolin in Gynecology.

Chiron (*El. Prog. Gen.; Annales of Gynecology*, December, 1889) has made numerous experiments with this antiseptic, especially in the treatment of specific vesical inflammation. He used two and five per cent. solutions without causing pain or any toxic symptoms, while the trouble was speedily relieved. In gonorrhœal vaginitis and endometritis he used douches and applications of a five per cent. solution with marked benefit. Creolin gauze was found to be a good substitute for iodoform in tamponnade of the uterine cavity. Creolin, he concludes, seems to be particularly destructive to the gonococci.

The Treatment of Pyosalpinx by Drainage into the Uterus.

Gottschalk (*Deutsche Medizinalzeitung*, 1889, No. 13) describes this method of treatment, which is only applicable to cases in which the wall of the tube is still quite thick. The uterine cavity is dilated by means of tampons of iodoform gauze, which are replaced daily for several days, then are left in *situ* for three days, when the cervical canal is so distended that the finger can be readily introduced. In two instances the tubes were emptied spontaneously, which seems to prove that the *ostium uterinum* is also dilated by the tampon. If dilatation of the uterine cavity alone does not cause emptying of the tube, the endometrium may be curetted, or the tube may be compressed and its contents squeezed into the uterus.

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CONTENTS.

ORIGINAL COMMUNICATIONS.

PAGE

A Case of Fracture of the Temporal Bone, with Remarks on Trephining for Fracture of the Base of the Skull. By J. Collins Warren, M.D. 439

Abscess of the Larynx. By George A. Richards, M.D. 450

Report of a Case of Injury to the Head. Death after Fifteen Years from Otitic Meningitis. Extensive Necrosis of Petrous Portion of Temporal Bone. Autopsy. By J. B. Shapleigh, M.D. 456

An Investigation into the Etiology of Phthisis.

On the Clinical History of Phthisis Pulmonalis. By E. L. Shurly, M.D. . . 462

The Tubercle Bacillus. By Heneage Gibbes, M.D. 466

Agoraphobia and Allied Morbid Fears. By C. W. Suckling, M.D. (London), M.R.C.P. 476

Shortening of Femur from Epiphysial Inflammation. By James K. Young, M.D. 483

A Unique Case of Vesico-utero-vaginal Fistula. By Henry C. Coe, M.D. . . 487

A Case of Antipyrine Poisoning, with the Formation of Membranes in the Mouth and Symptoms of Laryngismus Stridulus. By Julius L. Salinger, M.D. . . 489

REVIEWS.

Injuries and Diseases of Nerves, and their Surgical Treatment. By Anthony A. Bowlby, F.R.C.S. 493

A Handbook of Diseases of Women, including Diseases of the Bladder and Urethra. By Dr. F. Winckel 495

Internationaler Atlas Seltener Hautkrankheiten. International Atlas of Rare Skin Diseases. Atlas International des Maladies Rares de la Peau. Herausgeber-Editors-Editeurs: P. G. Unna, Hamburg; Malcolm Morris, London; L. A. Duhring, Philadelphia; H. Leloir, Lille 497

Clinical Lectures on Some Obscure Diseases of the Abdomen. Delivered at the London Hospital by Samuel Fenwick, M.D. 499

Insomnia and its Therapeutics. By A. W. McFarlane, M.D, F.R.C.P. Edin. . . 501

Manual of Skin Diseases, with Special Reference to Diagnosis and Treatment. For the Use of Students and General Practitioners. By W. A. Hardaway, M.D. 503

Food in Health and Disease. By I. Burney Yeo, M.D., F.R.C.P. 503

On the Geographical Distribution of some Tropical Diseases and their Relation to Physical Phenomena. By R. W. Felkin, M.D., F.R.S.E., F.R.G S. 504

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

PAGE

Ether and Chloroform . . . 505

On Deaths by Chloroform . . . 506

Therapeutic Use of Camphoric Acid . 508

Action of Olive Oil on the Secretion of Bile 509

Certain Uses of the Salicylate of Soda 510

Chloralamide as a Hypnotic . . 511

The Clinical Use of Theobromine as a Diuretic. 512

The So-called Double-cyanide of Zinc and Mercury 512

Strophanthine and Ouabaine . . 513

Annidaline, a Substitute for Iodoform 513

MEDICINE.

	PAGE
Influenza	513
Psychoses after Influenza	518
Curative Action of Erysipelas in Malignant Tumors	519
Acromegalia	520
Intratracheal Injections of Creasoted Oil	521
The Gastric Mucous Membrane in Secondary Diseases of the Stomach	521
On the Modification of the Gastric Function of the Stomach	523

SURGERY.

	PAGE
Contra-indications to the Method of Suspension in Spinal Disease	524
Chronic Obstruction of the Common Bile-duct by Gall-stones	525
Operation for Cholelithiasis	528
Intermediate Laparotomy for Appendicitis	530
The Radical Treatment of Hernia	530
The Radical Treatment of Congenital Inguinal Hernia	531
The Treatment of Tuberculous Inflammation of the Bones and Joints by Means of Iodoform Injections	532
Erasion in Joint Disease	533

OTOLOGY.

	PAGE
Disease of the Ear in Influenza	533
Aural Lesions Observed during the Recent Epidemic of Influenza	535
Acquired Atresiæ of the External Auditory Canal	536
Two Otological Mistakes	537
A New Pathogenic Mould Fungus in the Human Auditory Canal	537
Fibroma Auriculæ	537
A Case of Diabetic Primary Ostitis of the Mastoid Process	538

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

	PAGE
Intubation of the Œsophagus for Stricture	539
Abscess of the Larynx after Influenza	540
Round-celled Sarcoma of Larynx Removed by Laryngo-fissure	540

OBSTETRICS.

	PAGE
An Unusual Injury to a Child at Birth	540
The Preventive Treatment of Purulent Ophthalmia in the Newborn	541
Syphilitic Infection in Early Pregnancy	541
Pregnancy Lasting 300 and More Days	541
Two Cases of Idiopathic Universal Pruritus occurring at Labor	541
A Simple Tube for Antiseptic Douches	542
The High Application of the Forceps	543
The Forceps as a Rotator	543
The Knee-chest Position in the Delivery of Shoulder Presentations	543

GYNECOLOGY.

	PAGE
Herpes Menstrualis	544
The Endometrium During and After Menstruation	544
The Etiology of Vesical Gangrene	545
Ventro-fixation of the Uterus (Laparo-Hystéroplexie)	545
The Operative Treatment of Retroflexion of the Uterus	545
Vaginal Fixation of the Retroflexed Uterus by Schücking's Method	545
Statistics of Vaginal Hysterectomy	546
Extirpation of the Uterus and the Pelvic Connective Tissue	546
The Results of Castration for the Cure of Fibroma Uteri	547
Gonorrhœal Salpingitis	547
Rupture of Pyosalpinx into the Vagina	547
Adherent Intestines Mistaken for Pyosalpinx	548
Tuberculous Peritonitis	548
Is Iodoform an Antiseptic?	548